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# AIR FORCE OFFICE OF SCIENTIFIC RESEARCH

# Air Force Systems Command

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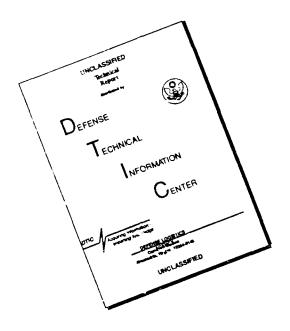
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# THIRD QUARTER 1986

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6,8,8-Trinitropentacyclo(6,3,0,02,5,03,8,04,8)decane, c10H9N308 AD-A169 886

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the sequences

to that of SIC free material. Additionally, the sequence were similar in SIC free 2124 prepared either by powder metallurgy, PM, or by ingot metallurgy. The quench sensitivity of 2124 was affected by the presence of SIC.

Both SIC particulate and whiskers increased the quench sensativity of 2124 somewhat, mainly by causing the precipitation of GPB zones and S' during the quench. The most pronounced effect of SIC was found to be a decrease in the volume fracture of GPB zones formed.

ESCRIPTORS: (U) \*AGE HARDENING, \*DEFORMATION, \*METAL MATRIX COM\*OSITES, \*SILICON CARBIDES, AGING(MATERIALS), ALLOYS, ALUMINUM, BILLETS, CASTINGS, FRACTURE/MECHANICS), MATRIXALS, MATRIXALS, MECHANICAL PROPERTIES, METALLURGY, PARTICLES, PHASE, POWDER METALLURGY, PRECIPITATION, QUENCHING, RATES, SEQUENCES, ALUMINUM ALLOYS, BILLETS(MATERIALS), WHISKER COMPOSITES, STREMATH(MECHANICS), INTERMETALLIC COMPONNOS

DESCRIPTORS:

ENTIFIERS: (U) Aluminum alloy 2124, Aluminum alloy 5456, EXPORT CONTROL, PEGI102F, WUAFOSR2306A1

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hanisms of Deformation in SIC/Al Composites. (U) Micro DESCRIPTIVE

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N.RS: Papazian, d. M., Adler, P. PERSONAL AL

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e being evaluated in order to discover ways to our mechanical properties. A particular aspect mation of these material that is being g due to the SIC and strengthening due to the th obtaining materials, designing appropriate of quantifying the effects of SiC on of the agn hardening phases. Ten composite e purchased and extruded, they include 2124 where quenching rate, aging practice, and Sic a the primary variables. The precipitation .> matrix alloys, and various volume fractions ticulate and whiskers. The effects of SIC on ic precipitates formed by conventional age institute. The first year's work has been The micro-mechanisms of deformation of tion in 2124 were evaluated in a variety of examined is the interaction between of Sic a iteminan Eniskers. - 474 - 10 . Idiozed e no Long precipi ABSTRACT: critica rtrengt Tagen and 545 Interne occup! Species billets conditi conterit

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	AD-A171 083	CALIFORNIA UF V	(U) Messurement and Function of the

DESCRIPTIVE NOTE: Final scientific rept. 1 Jan 82-31 Sep 850 89 3 Sterman, M. B.; Duchenko, T.; Hamel, A. S. Annual rept. 30 Sep 84-29 Sep 85, DESCRIPTIVE NOTH: PERSONAL AUTHOUSE 9 3

PERSONAL AUTHORS: Kaufman, Lloyd; Williamson, Samuel J.

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AFOSR-82-0336

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The objectives addressed during this phase

ABSTRACT: (U)

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of our work r vy be summarized as follows: 1) Complete initial study of sensorimotor and visual contical EEG

performance in an extended flight

correlates of simulation to

intrinsic at thoosed biological periodicities in these data; 2) In: are second, more corprehensive study to provide greater catalism of EEG performance correlates using power catalisms analysis, focus on problems of situational lusion and fatigue; and 3) Establish program at E and Air Force Base for in-flight testing

y techniques. Collect data for evaluation

program at E of EEG char. vigilance s

cistics in relation to the dimensions of

a induced changes in consciousness.

With gratings of various spatial frequencies drifting across a screen while the average valocity was modulated. Thresholds expressed either as the velocity was modulated. Thresholds expressed either as the velocity was modulated. Thresholds expressed either as the velocity was modulated (difference between peak and everage velocity with average velocity amplitude divided by average velocity outrast decreased with average velocity. The velocity contrast decreased with average velocity. The velocity contrast decreased with average velocity. The velocity contrast decreased with average velocity modulation frequencies of about 2 Hz and for spatial frequencies in the range of 2-4.5 c/d. In addition to these basic findings, we failed to find any effect of selective adaptation to changing speed others than that could be attributed to smooth motion. It changing speed per se are present in the human perceptual system. However, it is not possible to generalize from introduced by causing stimuli to change direction of seems unlikely that mechanisms tuned to respond to this to situations where higher derivatives are motion. (Author) ABSTRACT:

DESCRIPTORS: (U) \*VISUAL PERCEPTION, \*COMPUTER OPERATORS, \*VFLOCITY, WOTION, SENSITIVITY, ACCELERATION, AMPLITUDE MODULATION, CHARTS

T-38 sircraft, PEB1102F, WUAFOSR2313A4

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(U) Visual motion, PEG1102F, WUAFOSR2313AS

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(U) Spectroscopic Studies of the Products of the Reactions of Electronically Excited Atoms and Small Molecules.

DESCRIPTIVE NOTE: Final rept. 15 Apr 83-14 Apr 88,

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Golde, Michael F. ; PERSONAL AUTHORS:

AF0SR-83-0188 CONTRACT NO.

2303 PROJECT NO.

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for quenching of N2(A) and the availability of accessible acceptor states of the quenching molecule, as revealed by its absorption spectrum. Consistent with this correlation, the rate constants for several inefficient quenchers are greatly enhanced reactions with vibrationally-excited N2(A). Energy transfer leading to molecular dissociation is the dominant mechanism, when energetically allowed, for most reactions of N2(A) studied. Similar behavior is shown by both efficient and inefficient quenchers, and reactions of electronically excited Ar. Kr. and Xe atoms and N2(A 3 Sigma(+) sub u) and CO(a 3Pi) molecules with several oxygen, hydrogen and chlorine containing compounds have been determined, using emission spectroscopy, atomic resonance fluorescence and leser induced fluorescence measurements in discharge flow systems. As found previously for the excited noble gases. molecules. In contrast to N2(A), the isoenergetic CO(a 3 Pi) species if quenched very efficiently by H20. CH4 and H2. The reaction products have been investigated in an attempt to gain insight into this difference in behavior. there is a strong correlation between time rate constants The rate constants and products of the the results parallel the UV photochemistry of these ABSTRACT: (U)

SCRIPTORS: (U) \*LASER INDUCED FLUORESCENCE, \*RESONANCE RADIATION, \*REACTION KINETICS, RARE GASES, NITROGEN, DESCRIPTORS: (U)

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PEB1102F, WUAF05R230541

It TIFIERS: (U)

17/10 AD-A17, 029 COOPERATIVE 14ST FOR RESEARCH IN ENVIRONMENTAL SCIENCE BOULCER CO (U) Deterministic Methods of Seismic Source Identification.

DESCRIPTIVE NOTE: Annual technical rept. 30 Sep 83-1 Oct

144P NOV B4

PERSONAL AUTHORS: Archambeau, Charles B.;

F48820-83-C-0008, ARPA Order-4889 CONTRACT NO.

2308 PROJECT NO.

42 TASK NO

TR-88-0506 AFOSR MONITOR:

### UNCLASSIFIED REPORT

methods of theoretical seismogram synthesis in the near, regional and teleseismic distance ranges for structure and source definition; (4) Develop and apply advanced signal processing/analysis methods for discrimination and explosion yield astimation studies and; (5) Pursue near field studies of explosions and earthquakes for detailed source definition. This report describes specific research results pertaining to: (1) The theoretical basis for automatic seismic signal detection and analysis, and radiation fields is being employed to describe radiation fields for the prediction of earthquake and explosion (2) Analytical methods for the representation of seismic radiation fields and has been used to evaluate a variety radiation finids in uniformly layered elastic/anelastic media. This modal method provides predictions of both body and surface waves in the frequency range from 0 to about 15 HZ t near and regional distances from seismic The objectives were to: (1) Davelop and parameter discriminants, Pursue theoretical and observations studies of seismic sources; (3) develop comprehensive and integrates new and old results and methods. The modal representation method for seismic test methods of discrimination in the regional and sources. Thi latter exposition is intended to be teleseismic distance range using physical source 3 ABSTRACT:

## SEARCH CONTROL NO. EVN34M TIC REPURT BIBLIDGRAPHY

CUNTINUED AD-A171 029 and dis rimination methods. of detectic \*\*DISCRIMINATION \*\* SEISHIC SIGNATURES, LOSIONS, EARTHAUNES, SEISHOLOGY, SEISHIC SIER ANALYSIS, T'AS SERIES ANALYSIS DETECTION UNDERGROUM DESCRIPTORS

Seismic discrimination, Seismic discrimination, 310 Decomposition), WJAF0592309A2, PEB1102F Q-D (Quanths IDENTIFIERS:

AD-A171 027

STATE UNIV OF NEW YORK AT STONY BROOK DEPT OF APPLIED MATHEMATICS AND STATISTICS

On the Muintenance of Systems Composed of Highly Reliatio Components.

Research rept. Jul 84-Sep 85 DESCRIPTIVE NOTE.

SEP 85

PERSONAL AUTHORS: Katehakis, Micfhael N.; Derman, Cyrus

AMS-85-57 REPORT NO.

AF0SR-84-0138, NSF-DMS84-05413 CONTRACT NO.

2304 PROJECT NO.

TASK NO.

AFOSR MONITOR:

TR-88-0520

### UNCLASSIFIED REPORT

repairman may be assigned to a failed component. The objective is to determine repair allocation policies that maximize a measure of performance for the system such as the avected discounted system operation, time or the availability of the system. We consider systems composed of lighly reliable i.e. small failure rates, components ary study asymptotic techniques for the determination of exponentially distributed with parameters that may depend on the component but not on repairmen. At most one and a system composed of parallel subsystems connected in ptimal policies. In the final section we find asymptotically optimal policies for the series, parallel We consider the dynamic repair allocation problem for a general multi-component system that is maintained by a limited number of repairmen. Component functioning and repair times are assumed to be 3 ABSTRACT:

SCRIPTORS: (U) \*MAINTERANCE, \*SYSTEMS MANAGEMENT, \*APPLIED MATHEMATICS, REPAIR, ASYMPTOTIC NORMALITY, OPTIMIZATION, RELIABILITY, DYNAMIC PROGRAMMING DESCRIPTORS:

AC-A171 027

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AD-A171 029

## DTIC REPORT BIBLIDGRAPHY SEARCH CONTROL NO. EVN34M

AD-A171 002 14/2 20/3	MINNESOTA UNIV ST PAUL	(U) Variable Temperature Superconducting Magnetometer/		A NOTE	MAR 66 12P	PERSONAL AUTHORS: Dahlberg, E. D. ; Muenck, Eckard , Goldman, Allen M. ; Weyhmann, Walter ;
6/8	M UNIV COLLEGE STATION	earities in Asymptotic Memoryless Detection,	<b>Q</b>	S: Halverson, Don R. : Wise, Gary L. ;	AFUSR 82-0033, AFUSR-81-0047	2.304
AD-A171 013	TEKAS A	(U) On Ko	MAR 86	PERSONAL A	CONTRACT N.	PROJECT NO

## UNCLASSIFIED REPORT

**58-0437** 

MUNITOR: TASK NO.

POTE: Pub in IEEE Transactions on Paory, vII-32 n2 p202-280 Mar 86	The discrete time detection of a constant upting noise is considered first the case we is independent and identically as considered, and the criterion of sisting efficiency is umployed to investigate	the defector's performance induced by form of the defector nonlinearity from that if you confine the results show it and degradation in performance can be into of the L2 distance between the locally	carity y of interest. We then extend our case of weakly dependent phi-mixing noise in particular, asymptotic relative on be viewed as aspping between metric is continuous at the point of interest.
SUPPLEMENT!	ABSTRACT: signal fr where the distribu- asymptoti	altering off the that the bounded t	optimal r results : and see : efficienx spaces tr.

SSTRACT: (U) A variable temperature superconducting susceptometer has been acquired for the measurement of magnetic moments and susceptibilities of small samples over a wide range of temperature and magnetic field. This instrument is equipped for measurement over the temperature range from 1.8K up to 400K, and in magnetic fields up to 8 Testa. The system operates under full computer control of all of its parameters utilizing a software package which runs on a Hewlett Packard Touch

UNCLASSIFIED REPORT

ABSTRACT: (U)

TR-88-0528

AFOSR

MONITOR: TASK NO.

E

AF058-85-0047

CONTRACT NO. PROJECT NO.

2917

Screen II Computer. The instrument will be shortly retrofitted with a second SQUID Probe configured to permit measurements of components of the magnetization and susceptibility transverse to the axis of the instrument as well as to rotate samples about the axis of

the superconducting solenoid.

DESCRIPTORS	DESCRIPTORS (1) *SIGNAL PROCESSING, *NOISE REDUCTION,
EFFICIEN	". IMPTOTIC MERMALITY, DISCRETE DISTRIBUTION,
DETECTORS	ES THEOREM

DECISION I ...ry, PEB1102F, WUAFOSR2304A5

IDENTIFIERS

ENTIFIERS: (U) SQUID(Superconducting Quantum Interference Devices), PEB1102F, WUAFOSR2817A3 (U) (OENTIFIERS: (U)

CONTROL SYSTEMS

DESCRIPTORS: (U) \*MAGNETOMETERS, \*ELECTROMAGNETIC SUSCEPTIBILITY, \*SUPERCONDUCTORS, MAGNETIC MOMENTS, MAGNETIC FIELDS, TEMPERATURE COEFFICIENTS, QUANTUM ELECTRONICS, RESEARCH MANAGEMENT, COMPUTER APPLICATIONS,

45-317 002

AC-A171 018

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EVN34M

## DITC REPORT BIBLIDGRAPHY SEARCH CONTROL NO. EVN34M

AD-A170
20/8
AD-A170

COLOR . UNIV AT BOULDER

(U) Lat " Diagnostics for Plasma Turbulence Research.

DESCRIPTIVE NOTE: Final rept. 1 Jan-31 Dec 85,

MAR E 4P

PERSONAL 1. THORS: Robertson, Scutt ; Stern, Raul ;

CONTRACT (4) AFOSR-85-0069

PROJECT . 2301

TASK NO A7

MONITOR. AFUSR IR-88-0428

## UNCLASSIFIED REPORT

ABSTRACT (U) A tunable scanning dye laser pumped by an argon or laser (Coherent Morels 688-21 and IMMOVA-12UV, respectably has been installed for use as a diagnostic in extents on lon beams and plasma turbulence. The laser to a new experiment to determine the atomic use 14 to a new experiment to determine the atomic use 14 to a new experiment to determine the atomic process in the atomic entit in Modern Diagnostics of Megative Hydrogen Plasman, its accorted by a MATO grant. (Author)

DESCRIF S. (U) «TUNABLE LASERS, «DYE LAYERS, «PLASMA DIAG: 12, ARGOM LASER, LASER PLAMPING, ION BEAMS, TURBU. 6

IDENTIFIENS (U) PEBITO2F, WUAFOSR2301A7

## AD-A170 976 7/3

MISCUNSIN UNIV-MADISON DEPT OF CHEMISTRY

(U) Polysilane High Polymers with Distinic Side Groups: Syntheses, Properties, and Addition of Hydrogen Halides,

EC 855 5P

PERSONAL AUTHORS: Stueger, Harald ; West, Robert ;

CONTRACT NO. F48820-83-C-0044

PROJECT NO. 230

TASK NO. B2

MONITOR: AFOSR TR-88-0589

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Macromolecules, vi8 n12 p2349-

2352 Dec 85.

ABSTRACT: (U) Three polystlane polymers containing alkene substituent groups were prepared by sodium condensation dichlorostlanes: poly((2-(3-cyclobexenyl) ethyl)methylsilylene (1) and copolymers of this with phenylmethylsilylene (1) and n-propylmethylsilylene units (2). These polymers undergo cross-linking when irradiated with UV light or heated to 200 C in vacuo. Addition of HCl or HBr to 1 or 2 in the presence of Levis acid catalysts gave the corresponding chlorine-or browine-containing polymers, with little degradation of the polysilane backbone.

DESCRIPTORS: (U) \*SILANES, \*POLYMERS, \*SYNTHESIS(CHEMISTRY), \*ADDITION REACTIONS, SODIUM, COMPENSATION, CHOROSILEMES, CROSSLINKING(CHEMISTRY), LIROGEN CHIORIDE, HYDROGEN COMPOLNDS, BROMIDES, UL'RAVIOLET RADIATION, MACROMOLECULES, REPRINTS

IDENTIFIERS: (U) WUAFOSR2303B2, PEB1102F

SEARCH CONTROL NO. EVN34M DITC REPORT BIBLIDGRAPHY WUAF05R2303B2, PEB1102F

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AD-A170 972 7/3 1/6 A170 872

MISCONSIN UNIT MADISON DEPT OF CHEMISTRY

IR Transit o Moment Directions in Matrix-Isolated Dimethyls: ylene and i-Methylsilene. IR Trans! 3

Ryabe, Gerhard ; Vancik, H. ; West, Robert ; PERSONAL AUTH . MICHI, Josef

+ 49520- 83-C-0044 CONTRACT NO.

PROJECT NO.

TASK NO.

AFC 2 TR 0 0588 HONITOR:

UNC.. ASSIFIED REPORT

Special American Chamical Society, vice of partical Chamical Society, vice of pd71-877 1988. SUPPLEMENTARY 1 TE.

transitions of 2 relative to the pipels of transitions of 2 relative to the pipels of 1 The resulting map of the IR transition of the Molecules of 1 provides strong of a failed assignment of the nature of the correctness of erry little doubt as to the correctness of Footoselection on the 450 rm absorption polarized 486 rm alsorption polarized 486 rm light, which converts in an energy permitted the assignment of six of I and twelve IR transitions of 2 as inor plane polarized. Photoselection on the con band of 2 with polarized 248-nm light, 2 back into 1 allowed a determination of the structural and vibrational assignments in 1 and 2. Irradiation of martrix-isolated major product plan polarize transition r moment dire. dimethyldisz band of 1 vi ŝ the absolute Into 1-methy plane or out IR transition which conver results lea. 280-rm abso: vibrations! support for ABSTRACT:

\*\*SILANES, \*METHYL RADICALS,
EEACTIONS, IMRADIATION, ELECTRON
DIPTION SPECTRA, POLARIZATION, VIBRATION,
AR STRUCTURE, DICHROISM, REPRINTS TRANSITIONS MOMENTS, MOL. . PHOTOCHEMI DESCRIPTORS:

Silylene/Dim thyl, Silene/I-Methyl, IDENTIFIERS:

43-A170 872

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# SEARCH CONTROL NO. EVN34M DIIC REPORT BIBLIOGNAPHY

AD-A170 970 BROWN UMI. PROVIDENCE RI DIV OF ENGINEERING 20/12 AD-A170 971

d Monlinear Resonant Interactions in

(U) Picos

Semi conductors. DESCRIPTIVE NOTE: DESCRIPTIVE HOTE: Interim rept. no. 1 (Annual), 1 Jan-31 Actors. Sin

5 MAR BO 9ec 12,

Nurmikko, Arto V. · CRS: PERSONAL A.

2306 PROJECT NO

MONITOR:

7

TASK NO.

45058 18 88-0528

## UNCLASSIFIED REPORT

propertion of semiconductors containing magnetic elements. Emphasis as placed on the interaction of such materials with ultimort pulses of laser radiation in order to study control electronic and magnetic excitations under selected mequilibrium conditions. We hoped to generate magnetically oriented 'domains' through realcoscopy with picosecond laser pulses. (Author) s to fast optoelectronic devices. The mixed conductors (Cd, Mn)Se and (Cd, Mn)Te were contract work cas generated a number of e.g. we measured the furnation of local, This research was aimed at advancing ng and utilization of selected optical its through experimental reserveh for used. Tale microsc.. time spe understa novel rs applicat crystal firsts ABSTRACT:

(U) \*SEMICONDUCTORS, \*MAGNETIC MATERIALS.
~( OF SOLIDS, \*MAGNETIC DOMAINS. CADMIUM
MANGANESE COMPOUNDS, SELENIDES, TELLURIDES,
TEMPERATURE, SPECTROSCOPY, PHOTONS DESCRIPTOR EXCITONS \* BANG T COMPOUR

Magnetto Cularon), Cadmium manganase selenide, Cadmium manganese telluride, WUAFOSR2306C2, PE61102F (U) Magnetic excitations, BMP(Bound DENTIFIER

#### 20/3 20/12

MICHIGAN UNIV ANN ARBOR COASTAL ZONE LAB

(U) Picosecond Nonlinear Resonant Interactions in

Interim rept. no. 2 (Annual) 1 Jan-31 Dec 83,

MAR 86 PERSONAL AUTHORS: MJrmikko, Arto V.;

F49820-82-C-0044

CONTRACT NO.

2308 PROJECT NO.

ដ TASK NO.

TR-88-0524 AFOSR MONITOR:

UNCLASSIF/ED REPORT

properties of semiconductors containing magnetic elements. Emphasis was placed on the interaction of such materials novel results through experimental resorch for applications to fast optoelectronic devices. The mixed crystal semiconductors (Cd. MniSe and (Cd. MniSh and the contract work has generated a number of 'firsts', e.g. we measured the formation of local microscopic magnetically oriented 'domains' ihrough resitime spectroscopy with picosecond leser pulsus. (Author) selected nonequillibrium conditions. We hope to generate Matic excitations under with ultrashort pulses of leser radiation in order to This research was aimed at advancing understanding and utilization of selected optical study coupled electronic and ABSTRACT: (U)

\*GKOUP II VI COMPOUNDS, \*PULSED LASERS, \*MAGNETIC RESONANCE, CADMIUM COMPOUNDS, MANGANESE COMPOUNDS NOMLINEAR SYSTEMS, SELENIDES, TELLURIDES, LIGHT PULSES, SPECTROSCOPY, MAGNETOOPTICS, IONS, COUPLING(INTERACTION) \*SEMICOMOUCTORS, \*MAGNETIC DOMAINS, REAL TIME, EXCITONS 3 DESCRIPTORS:

manganese selenide, Cadmium manganese telluride, Magnetic excitations, T-2 relaxation time, BMP(Round Magnetic Resonant Interactions, Cadmium DENTIFIERS: (U)

AD-A170 870

AD-A170 971

EVN34M SEARCH CONTROL NO DIIC REPURT BIBLIOGRAPHY

> CONTINUED AD-A170 970

NORTH CAROLINA UNIV AT CHAPEL HILL CENTER FOR STOCHASTIC PROCESSES

12/1

AD-A170 844

gnetic polarons, Polarons, WUAF0SR2308C2, Polarona). PE61102F

Technical rept. no. 132, Sep 85-Aug 86, (U) Semigroups and Poisson - Approximation. DESCRIPTIVE NOTE:

DEC 85

Dehauvels, P. ; Pfetfer, D. PERSONAL AUTHORS:

F48620-85-C-0144 CONTRACT NO.

2304 PROJECT NO.

8 TASK NO. AF0SR TR-88-0339 MONITOR:

## UNCLASSIFIED REPORT

Availability: Document partially illegible.

buthors on Poisson approximation for (general) independent Bernoulli summands with respect to the total variation distance, without imposing any conditions on the underlying parameters. This enables one to study also the case of unbounded means, without asymptotic uniform smallness of the individual summands, provided that the variance increases with the same rate as the mean. An important practical situation in which such an asymptotic behaviour occurs is described by Ross's Markov chain model for the Simplex Algorithm in linear programming, which will be discussed as an example of possible This paper extends previous work of the application. (Author) 3 ABSTRACT:

DESCRIPTORS: (U) \*GROUPS(MATHEMATICS),
\*APPROXIMATION(MATHEMATICS), RANDOM VARIABLES, ALGORITHMS.\*
ASYMPTOTIC NORMALITY, LINEAR PROGRAMMING, STOCHASTIC
PROCESSES

DENTIFIERS: (U) \*Semigroups(Mathematics), Simplex method, PE61102F, WUAF0SR2304AS IDENTIFIERS:

40-5170 864

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AD-A170 970

PAGE

EVN34M

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# SEARCH CONTROL NO. EVN34M DITC REPORT BIBLIOGRAPHY

PHILADELPHIA PA DEPT OF ELECTRICAL AND COMPUTER . ATTNEERING, DREXEL U

AD-A170 835

- Facilities for High-Speed Data Acquisition, Signal Frecessing and Large Scale System Simulation.

DESCRIPTIVE MOTE. Final rept. 15 Dec 84-14 Apr 86

28P 58 NJ PERSONAL ACTIONS: BINGULAY, NINAT M.

AF05R-86-0056 CONTRACT NO

2917 PROJECT NO

TASK NO.

AFGSR 1× 88-0507 MOKITOR:

## UNCLASSIFIED REPORT

in order to improve the exiting facilities to STRACT: (1) This equipment grant was issued under the DOO University Research Instrumentation Program for the to the National Defense Goals. In accordance additions of the grant, the funds have been a fulfill the stated goals of the grant. ersity, Electrical and Computer Engineering purpose or a grading the research instrumentation at ort present and future research having expended : relevance vith the Drexel U better s Departme:

(U) \*MILITARY RESEARCH; \*INSTRUMENTATION, MEUTERS, GRANTS, RESEARCH FACILITIES, ENGINEERING, COMMUNICATIONS NETWORKS ELECTRICAL DESCRIPTORS DIGITAL

Funding, VAX 11/780 computers, Ethernet WUAF0SR25 : 743, PEB1102F

1/4 AD-A170 823 BRISTOL UNIV (ENGLAND) DEPT OF INDROANIC CHEMISTRY

(U) Compounds Containing Heteronuclear Metal-Metal Bonds.

DESCRIPTIVE NOTE: Final rept. 1 Mar 82-28 Feb 88

24P MAR 86 PERSONAL AUTHORS: Stone, F. G.

AF0SR-82-0070 CONTRACT NO.

PROJECT NO.

2 TASK NO.

TR-88-0510 AFOSR MONITOR:

## UNCLASSIFIED REPORT

containing bonds between iridium and oumium or platinum. In a further study the first mixed-metal Clusters involving osmium and platinum with interstitial carbido ligands are reported. Rational synthatic routes have been developed for preparing cluster compounds containing chains and rings of metal atoms in which the metal-metal bonds are bridged by sikylidyne groups. This work has led structural characterisation of several gold-ruthenium cluster compounds, as well as the discovery of the first trimetallic complexes containing the hexanuclear core to the characterisation, via X-ray diffraction and n.m.r studies, of noval compounds with core structures having sight metal atoms (Pt4M4 or Ni2Pt2M4) in a ring in the structures MM'Ru4 (M  $\times$  Ag, N'  $\circ$  Cu; M  $\circ$  Au, M'  $\circ$  Cu; M  $\circ$  Au, M'  $\circ$  Ag). Using variable temperature 31P-1H muclear polytopsi rearrangements of these clusters in solution. Also described are new heteronucless cluster compounds This Report describes the synthesis and magnetic resonance spectroscopy we have observed shape of a 'star'. 3 ABSTRACT:

DESCRIPTORS: (U) •SYNTHESIS(CHEMISTRY), \*ANALYTICAL CHEMISTRY, •METAL COMPLEXES, •NETAL METAL BONDS, HETEROCYCLIC COMPOUNDS, GOLD, NUTHENIUM, CLUSTERING, TERNARY COMPOUNDS, NUCLEAR MAGNETIC RESOMANCE.
SPECTROSCOPY, CHEMICAL BONDS, IRIDIUM, OSMIUM, PLATINUM, POLYCYCLIC COMPOUNDS, MOLECULAR STRUCTURE, LIGANDS

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AD-A170 935

# DITIC REPURT BIBLIDGRAPHY SEARCH CONTROL NO. EVN34M

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PESTICAF, WUAFOSR2302B2

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IDENTIFIERS:

AD-A170 915 9/2

DUKE UNIV DURHAM NC DEPT OF COMPUTER SCIENCE

(U) A Single Server Queue in a Mard-Real-Time Environment,

DEC 85 9P

PERSONAL AUTHORS: Baccelli, Francois ; Trivedi, Kishor S. ;

CONTRACT ND. AF0SR-84-0132, NSF-MCS83-0200

PROJECT NO. 2304

TASK NG. K3

MONITOR: AFOSR TR-88-0594

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Operations Research Letters, v4 n4 p181-188 Dec 88.

ABSTRACT: (U) We consider a single server first in first out queue in which each arriving task has to be completed within a certain period of time(its deadline). More precisely, each arriving task has its own deadline - a non-negative real number - and as soon as the response time of one task exceeds its deadline, the whole system in considered to have failed. In that sense the deadline is hard). The main practical motivation for analyzing such queues comes from the need to evaluate sathematically the reliability of computer systems uporking with real time constraint: (space or aircraft systems for instance). We shall therefore be mainly concerned with the analytical characterization of the transient behavior of such a queue in order to determine the period of time (the 'mission time'). The probabilistic methods for analyzing such systems are suggested by analyzing such systems are telecommunications systems. (Author)

DESCRIPTORS: (U) \*QUEUEING THEORY, \*DOWNTIME, REAL TIME, MATHEMATICAL MODELS, NUMERICAL ANALYSIS, SYSTEMS ANALYSIS, REPRINTS

IDENTIFIERS: (U) PEB1102F, WUA-OSR2304K3

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PAGE 12 EVN34M

# SEARCH CONTROL NO. EVN34M DIIC REPORT BIBLIOGRAPHY

CORNELL UNIV ITHACA NY LAB OF PLASMA STUDIES 10/3 20/7 AD-A170 905

(U) Interim S. Jentific Report for the Induction Lines Program

Annual rept. 1 Oct 83:30 Sep 84, DESCRIPTIVE NOTE:

SEP 84

Nation, John A. PERSONAL AUTH .. S:

AF0SR-83-0364 CONTRACT NO

3301 PROJECT NO

4 7. Č 160.

18 0548 MONITOR:

## UNCLASSIFIED REPORT

Carried out crincipally using a dedicated Glumlain facility as the pulse power source. As previously described the source feeds a two to one step up autotransferrer, which when coupled with a direct autotrastic feed to the anode from the Blumlain, gives a diode voir up a three times the line output voltage. The nominal operating impedance of the system is 21 Ghms. This system has continued to work well during the current grant period (Author) ABSTRACT:

SCRIPTORS: 'U) +LINEAR ACCELERATORS, +PROTON
ACCELERATORN: +PULSE GENERATORS, POWER SUPPLIES,
ELECTRICAL DESEDANCE, PROTON BEAMS, TRANSIENTS, FERRITES,
INDUCTANCE, EUHS, DIODES, WAVEFORMS DESCRIPTORS

Ferrite corrs, Beam diagnostics, Injectors, Faraday Gups, Charge neur alization, Intense beams, PE61102F, Bluminin facilities, Autotransformers, WUAF05R236 . ~ 7 DENTIFIERS

7/3 AD-A170 889 SAN DIEGO STATE UNIV CA DEPT OF CHEMISTRY

Kinatic and Product Studies of the Thermal Decomposition of Dimethylstlane in a Single-Pulse Shock Tube and in a Stirred Flow Reactor, 3

2

₹ PERSONAL AUTHORS: Rickborn, S. F.; Rogers, D. S.; Ring, M.; O'Meal, H. E.;

AF0SR-83-0209 CONTRACT NO.

2303 PROJECT NO.

TASK NO.

AF0SR TR-88-0591 MONI TOR:

## UNCLASSIFIED REPORT

pub. in Jnl. of Physical Chemistry, vs0 n3 p408-414 1986. SUPPLEMENTARY NOTE:

pyrolysis of dimethyisilane in a single-pulse shock tube (1135-1280 K) and in a situred flow reactor (880-1000 K) are reported. The shock-induced reaction is accelerated by frea-radical and silylene chains which cannot be quenched by trapping agents. The mechanisms of the pyrolysis in various temperature ranges are discussed and modeling results for the attirred flow and shock tube reactions are shown to be in reasonable agreement with cimethylsilane are reduced, establishing an activation unergy or Ch3SiH insertion into the (C-H) bond of The Kinetic and product studies of the sething of E similar to 24.5 kcal (pressure standard secomposition of dimathylsilylene to ethylene and scetylene via silacyclopropane and silacyclopropene intermediates, respectively, are proposed. Arrhanius parameters for molecular elimination of methane from experimental observations. Mechanisms for the 3 ABSTRACT: state).

DESCRIPTORS: (U) \*SILAWES, PYROLYSIS, REACTION KINETICS, SHCK TUBES, MOELS, REPRINTS

\*Dimethylsilane, \*Dimethylsilylene 9 IDENTI- JERS:

AD-4:70 869

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AD-A170 905

DTIC REPORT BIBLIDGRAPHY SEARCH CONTROL NO. EVN34M

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AD-A170 868 9/1 20/12

CALIFORNIA UNIV SAN DIEGO. LA JOLLA DEPT OF ELECTRICAL ENGINEERING AND COMPUTER SCIENCES

(U) Computation of Dutput Electron Distributions in Avalanche Photodiodes,

JUL 84 5P

PERSONAL FIT-INRS: Helstrom, Carl W. :

CONTRACT NO. AFOSR-82-0343

PROJECT NO. 2304

FASK NO. AS

MONITOR: AFOSR TR-84-1158

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in IEEE Transactions on Electron Devices, vED-31 n7 p955-958 Jul 84.

ABSTRACT: (U) The cumulative probability distribution of the number of electrons counted during an interval (0,T) at the output of an avalanche photodiode is calculated from Personick's and McIrtyre's model by numerical contour integration in there complay plane, a mathod that yields accurate results with a number of operations roughly independent of the numbers of electrons involved. The incident light is assumed for the sake of illustration to produce electrons with a poisson discribution. (Author)

DESCRIPTORS: (U) \*PHOTODIODES, \*AVALANCHE DIODES, \*SEMICOMDUCTORS, PAIR PRODUCTION, INTEGRATION, ELECTRONS, ENERGY, REPRINTS, MONTE CARLO METHOD, VOLTAGE

IDENTIFIERS: (U) Personick's model, Poisson distribution, Approximation, Photosensitive diodes, McIntyre's model, MUAFOSR2304A5, PEB1102F

# SEARCH CONTROL NO. EVNJAM DIIC REPORT BIBLIOG APHY

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AD-A170 854 7/3 AD-A170 : 3

VANDERBILT UNIV NASHVILLE IN DEPT OF CHEMISTRY (U) The Calculation of Infrared Intensities, Crystal Structure and Conformational Analysis of scampthyloycloheptasilane, (Me251), (U) X-F **Te** t

MISCON: A UNIV-MADISON DEPT OF CHEMISTRY

3

Shaftee, Fathieh ; Damewood, James R. , Jr. : Haller hermeth d. : West, Robert ; PERSONAL PURIORS:

F48820-83-C-0044 CONTRACT NO

2303 PROJECT N

TASK NO.

TR-86-0583 AF OSR MONITOR:

## UNCLASSIFIED REPORT

asy NOTE: Fub. in Unl. of American Chemical viol n24 p6850-6856 1885. SUPPLEMENTARY NOTE: Society

calculations indicate that while cycloheptane and I adopt similar thist-chair ground-state structures, these molecules show significant differences in the structures of other possible conformations (chair, twist boat, and boat) and the barriers to their interconversion. The average of Si angle in I (116.2) is larger than that Molecules of 1 are of approximate C2 symmetry and adopt a twist-ciair conformation. Empirical force field (EFF) chylcyloheptasilane (1) has been determined. The crystal and molecular structure of other cyclosilanes. 3 found fr ABSTRACT tetraç

(U) \*SILANES, \*CYCLIC COMPOUNDS, CRYSTAL X RAY DIFFRACTION, MOLECULAR STRUCTURE, METHYL REPRINTS RADICALS STRUCTU DESCRIPT

Silane/Tetradecamethylcyclohepts. .:82, PEB1102F 9

#### Schaad, L. J. ; Ewig, C. S. ; Hess, B. A. AFUSR-82-0100, AFUSR-85-0072 Jr.: Michalska.D. 2303 PERSONAL AUTHORS:

CONTRACT NO.

NOV 85

PROJECT NO.

TASK NO. MONITOR:

## UNCLASSIFIED REPORT

AF0SR TR-86-C332

Pub. in Jnl. of Chemical Physics, v83 nto p5348-5349, 15 Nov 85. SUPPLEMENTARY NOTE:

ab initio quantum calculations. It constructs an approximately uniform electric field relying on appropriately placed point charges. Examples are presented using the infrared spectrum of ethylene computed in two basis sets both by the present method and by earlier methods. These are compared with experimental relative intensities of infrared spectral lines employing spectra. The two theoretical methods give essentially identical results, and those in the larger basis give We show a new method for computing good agreement with experiment. ABSTRACT:

SCRIPTORS: (U) \*INFRARED SPECTRA, \*SPECTRAL LINES, COMPUTATIONS, ELECTRIC FIELDS, DIPOLE MOMENTS, ETHYLENE, DESCRIPTORS: REPRINTS

WUAF0SR2303B2, PE81102F IDENTIFIERS: (U)

# SEARCH CONTROL NO. EVN34M DTIC REPORT BIBLIOGRAPHY

CONTINUED	IDENTIFIERS: (U) WUAFOSR2312AB, PEB1102F	
AD-A170 862 CONTINUED	IDENTIFIERS:	
6/20 f/5	EIDGENDES "HE TECHNISCHE HOCHSCHULE AND ZURICH UNIV SCHWERZE: : (SWITZERLAND) INST OF TOXICOLOGY	(U) Correl. In of Mutagenic, Cardinogenic and Cocard Info Effects of Chemical Substances.  Granul Pouch Assay.
AD-A170 862	ETDGENDES SCHWERZE:	(U) Correl. Cocarc Granul

DESCRIPTIVE .. (E: Final rept. 1 Sep 82-31 Aug 85.

187 0CT 85 (S: Zbinden, Gerhard ; Mater, Peter ; PERSONAL AUT

AF0SR-82-0338 CONTRACT NO

2312 TASK NO. A. PROJECT NO.

A : SR 1 ≈ 88-0571 MONITOR:

## UNCLASSIFIED REPORT

f: (18) The research project is concerned with the close of premalignant and malignant cells induced in in a selection to be a second of the control of the		mutations of cell transformations. Various assays were developed to investigate the growth characteristics of normal, continuous axposed and transformed granulous.	pouch cell. These included: primary cloning efficiencies under opt: .! growth conditions, growth in serum deficient 'calcium depleted media prouth to coft again.	- 7	dispersion on individual cells and the appearance of calcium by any proteins. Furthermore the genotoxic/cytotoxic activity of asbestos fibers was investigated.
ABSTRACT: (1:) detection f	Cells exp DNA dems	developed rorsel, c	porch cel under opt deficient	growth in normal cel	dispersion calcium t

AC-A370 862

DESCRIPTORS
CELLS(BIOL
CARCINOLE
CLONES, C.
PROTEINS, C.

AG-A170 862

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THUE

SEARCH CONTROL NO. EVN34M DITC REPURT BIBLIOGRAPHY

CONTINUED AD-A170 860 AD-A170 860

PROVIDENCE RI DIV OF ENGINEERING BROWN UNIV

PES1102F

! Nonlinear Resonant Interactions in (U) Picosec

1018 Semicon

no. 4, 1 Jan-31 Dec 85 Annual rept . !!! DESCRIPTIVE >

28P MAR BG Murmikko, Arto V. , , PERSONAL AUTH

F 49820-32-C-0044 CONTRACT NO.

2306 PROJECT NO. TASK NO.

C

Af. 2 TR -3-0529 MONITOR:

## UNCLASSIFIED REPORT

semiconductors containing magnetic elements, placed on the interaction of such materials to fast optoelectronic devices. The mixed conductors (Cd. Mn)% and (Cd. Mn)Te were tract work has generated a number of firsts, and the formation of local, microscopic oriented domains' through real-time with picosecond laser pulses. (Author) selectronic and magnetic excitations under Assistantian conditions. We hoped to generate ant pulses of leser radiation in order to This research was aimed at advancing and utilization of selected optical . through experimental research for Emphasis La study coupling used. The c ABSTRACT: (U understand: with ultra. novel resul crystal ser a.g. ve me: spectrosco; properties applicatio.

\*\*U) \*\*SEMICONDUCTORS, \*BAND THEORY OF SOLIDS, \*\* REACTIONS, \*\*MAGNETIC DOMAINS, PULSED \*\*\* COMPOUNDS, MANGANESE \*\*\*PIUM COMPOUNDS, TELLURIDES, MAGNETIC \*\*\*\*LIDES, ELECTROOPTICS, INFRAREO RADIATION \*RECOMBINA LASERS, CA COMPOUNDS MOMENTS, S DESCRIPTORS

fluorides, "santum manganese selenide, Semimagnetic semiconductivs, Spin, Cadmium manganese telluride, Superlatti », Optoelectronics, Resonant interactions, F shail, Blook states, Magnetooptics, WUAFUSR2306C2, (1) Lead suropium telluride, Barium DENTIFIERS

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AD-A170 880

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# SEARCH CONTROL NO. EVN34M DITIC REPORT BIBLIOGRAPHY

AJ-A170 859

LA JOLLA INST CA

(U) Low-Energy Callisions of Excited Atoms.

Final rept. 1 May 35-30 Apr 88 CESCRIPTIVE NOTE.

MAY 86

Neynaber, Roy H. ; Tang, Shang Y. ; PERSONAL AUTHORS

F. :: 20-85-C-0070 CONTRACT NO.

23. F. SUECT NO.

₹ FASK NO. AFCS Z NITOR:

TR-88 3519

## UNCLASSIFIED REPORT

but Some of gas of ground state and excited Names. Some of the experiments involved laser excited Namestant included are investigations of excited Name-Cl, met stuble Me-Li, Li-Cs, and Li-excited Name-Cl, met studies of the context of th studies of lon part production, chemitonization, and messurements of the fraction of excited Na atoms in a The report describes molecular beam atoms. Some of composite bcan as a reactant ABSTRACT: (U)

SCRIPTORS: (U) \*ATOMIC BEAMS, \*PAIR PRODUCTION, \*IONIZATION, () PURE TRANSFER, EXCHANGE REACTIONS, CROSS SECTIONS, LAS. PUMPING, SOBIUM, 10() BEAMS LESCRIPTORS: (U)

ENTIFIERS: (I): Penning ionization, Chemilc.:/zation, Ion molecule :: teractions, WUAFOSR2301A4, PE6:102f IDENTIFIERS: (U)

20/8 AD-A170 845

1/4

WESTINGHOUSE RESEARCH AND DEVELOPMENT CENTER PITTSBURGH

(U) Program to Develop an Optical Translator and Switch.

Annual rept. no. 1, 1 Apr-30 Sep 85, DESCRIPTIVE NOTE:

ğ

Ï Henningsen, T.; Garbuny, M.; Hopkins, R. PERSONAL AUTHORS:

REPORT NO. 85-9F42-NUTRN-R2

F49620-84-C-0103 CONTRACT NO.

2305 PROJECT NO.

2 TASK NO.

TR-88-0544 AFOSR MONITOR:

## UNCLASSIFIED REPORT

without the need of cooling. However, thu spectroscopic matching conditions of the two complementary materials are stringent. Under the guidance of the theoretical work, a scarch for suitably matching materials is now underway. analytically the concept of multistage optical transistors based on two spectroscopically complementary materials. It is shown that very high total gains can be obtained with either of two alternatives, viz. (1) a chain of discrete complementary transistor units, or (2) a complementary transistor units, or (2) a complementary transistor units, which has no electronic analog). Whereas the total gain grows exponentially with the number of stages, the required constant photon fluxes grow only linearly with that number. High signal-to-noise ratios can be obtained Work during this period evaluated Ξ (Author) ABSTRACT:

:

SSCRIPTORS: (II) \*TRANSISTOPS, \*OPTICS, \*SWITCH, AG CIRCUITS, STACING, SPECTROSCOPY, SIGNAL TO NOISE RATIO, RADIATION ABSCRPTION, LINEAR SYSTEMS, PHOTONS, 'YOISE, CRNSS SECTIONS, RESPONSE, LITHIUM, GAIN, SODIUM DESCRIPTORS: (U)

Complementary materials, Collector IDENTIFIERS: (כ)

40-6470 BAS

JAC: ASS: 1155

40-A170 859

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# SEARCH COLIFROL NO EVN34M DITC REFORT BIBLIDGRAPHY

AD-A170 840

CONTINUED AD-A170 848

not wave., Control beams, uptical ins(Optical), Continuos transistors, SR130584 Deams, Evans

trarsistors PEG1102F, W

MARYLAND UNIV COLLEGE PARK DEPT OF COMPJTER SCIENCE

(U) Experimentation in Software Engineering.

38P NOV 855

ج آ rnsunal AUTHORS: Basili, Victor R. ; Selby, Richard M. ; Hutchens, David H. ; PERSONAL AUTHORS:

F49820-80-C-0001 CONTRACT NO.

18 · 1575

REPORT NO.

2304 PROJECT NO.

SA3 TASK NO.

TR-88-0580 AFCSR MONITOR

## UNCLASSIFIED REPORT

supports the advancement of the field through in teaching supports the advancement of the field through in teaching process. This paper presents a framework for analyzing most of the experimental work periormed in software angineering over the past several years. We describe a variety of experiments in the framework and discuss their contribution to the software enjineering discipline. Some useful recommendations for the application or the experimental process in software angineering are included. (Author) ABSTRACT: (U)

DESCRIPTURS: (U) +COMPUTER PROGRAMMING, +SYSTEMS ENGINEERING, ITERATIONS, LEARNING, EXPERIMENTAL DESIGN PLANNING IDENTIFIERS: (U) \*Software engineering, WUAFOSR2304A3, PE81102F

# DTIC REPORT BIBLIDGRAPHY SEARCH CONTROL NO. EVN34M

, AD-A170 838 20/3 4/2	WASHINGTON LINIV SEATTLE	(U) Radiative Energy Transfer and Thermal Management in Advanced Space Power and Propulsion Systems.	DESCRIPTIVE NOTE: Annual rept. 1 Oct 83-30 Sep 84,	MAR 86 24P	PERSONAL AUTHORS: Mattlck, A. T. ;Hertsberg, A. ;		PROJECT NO. 2301 TASK NO. K2	MONITOR: AFOSK TR-88-0565	. UNCLASSIFIED REPORT	ABSTRACT: (U) This work involved a theoretical study of radiation transt in droplet clouds, for predicting the performence of via liquid droplet radiator. The effects and of the development of a temperature profile on the droplet sheet are shown to be small.  DESCRIPTORS: (U) *ELECTROMAGNETIC SCATTERING *CLOUDS, DROPS, RADIATIVE TRANSFER, EMISSIVITY, ANISOTROPY IDENTIFIERS: (U) *LOR(Liquid Droplet Radiator), Stefan Boltzmann Law, Droplet sheets, WuafOSR2301K2, PE61102F
4.1 7/6	. OUL DER	Dynamics of Ion-Mclecule Reactions in a plow.	Final rept. 1 Oct 82-30 Sep 85,		Leone, Stepen R.; Blerbaim, Verculca M.;	: :20- <b>83</b> -C: 0015			UNCLASSIFIED REPURT	extensive set of studies was undertaken chemiluannescence, visible and laser invaced fluorescence of the dynamics of in molecule with dynamics of in molecule wing afterglow apparatus. Detailed all state distributions were determined teastions including neavy atom transfer teastions, Absolute branching ratios for stronically existed examined ration of a subspheric importance. The sistinguistion of an ion in an electric can characterized and a study of the tion has been initiated.  *AFIERGEOWS, *CHEMILUMINESCENCE, *LASER CE, VISIBLE SPECTRA, INFRARED SPECTRA, INFRARED SPECTRA, INFRARED SPECTRA, INFRARED SPECTRA, INFRARED SPECTRA.
	COLORADO UNIV	(U) State-Resc Flowing At	. SCRIPTIVE NOT	NOV 85.	SONAL AUTHOR	- Q	SUECT ND. 2	MITOR: AFOS	ž.	STRACT: (U) utilizing independent lumines Sataction to reactions in product vibra for a variety in polyment production of messured for rolastional drift (4010 for rolastional second f

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Generator.

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COLUMBIA	WEN YORK	COLUMBIA V NEW YORK DEPT OF ELECTRICAL ENGINFERING	TIS INST OF TEC
(U) Direct	I ting of Mic	(U) Direct - Iting of Microstructures for Solid-State	ELECTRONICS
Electr s.			(U) A Design by Example: Regular Structure
DESCRIPTIVE	FIEL FINES	DESCRIPTIVE - IE; Final rapt. I Fab 84-31 Jan 88,	DESCRIPTIVE NOTE: Master's thesis,
APR 10	448		FEB 85 114P
PERSCIUL AL	Doog #0 : \$ : .	PERSGUAL ALCOST Orgood, Richard M. J. ur.,	PERSONAL AUTHORS: Bamji, Cyrus S. ;
CCATRAC! NO		F48820-84-C-0022, ARPA Under-4487	REPORT NO TR-507
PROJECT NO	2301		CONTRACT ND. F49620-84-C-0004
TASK NO.			PROJECT NO. 2305
MONITOR:	3330-F¢		TASK ND. B3

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ABSTRACT:	This report summar(yes the years of
research	-44 lasti processing techniques or outer
m (Croste	CE. The main results are in the
demonstr	of UV leser direct priting of low
resttivi	tal lines, and the subsequent deponstration
.o € ≥ 0	-688 of laser writing (via derosition) to
the reco-	The of an LSI c'roul(ry and 2) the
discover	aracteriation, and understa ding of the
technic	11ght-guided etching for the fabrication of
ultra-r:	Nothing before lectronics structures in
the case	ant actived exchine an annitication of the
technique	cotical interconnects has already been
Camonstra	(Author)
DESCRIP (OP.	(9) *CIRCUIT INTERCOMMECTIONS

DESCRIFTOPS OF THE CUTT INTERCOANECTIONS ANTCROEL STOSY ALASER BEAMS, AINTEGRATED CIRCUITS, OUTRAVE SAFERS, DEPOSITION, ETCHING, SUBSTRATES, INDIUM, A MAIN TUNGSTEN, MOLYBDENUM, CARBON MOMOXIDE, GLASS

IDENTIFIERS (U) Direct Writing, Laber processing, Matall Phoes, Proceeding, Difraction gratings wuafosk2301A1, PEB1102F

## UNCLASSIFIED REPORT

AF0SR TR-88-0501

MONITOR:

ABSTRACT: (U) This thesis investigates technical insues concerning the automated generation of highly regular VLSI circuit layouts (e.g. RAMs, PLAs, systolic arrays) that are crucial to the designability and realizability of large VLSI systems. The key is to determine the most profitable lavel of abs. raction, which is accomplished by the introduction of true macro abstraction interface invertance, delayed bindif. In the complete decoupling of procedural and graphical usign information. These abstraction mechanisms are lapplemented in the Regular Structure Generator, an operational layout generator with significant advantages over first generation layout tools, multiplier layout example. A leaf cell compaint or that can investigated. (Author)

DESCRIPTORS: (U) \*COMPUTER AIDED DESIGN, \*GENERATORS, \*INTEGRATED CIRCUITS, \*STRUCTURES, \*COMPUTER GRAPHIC COUPLING(INTERACTION), RANDOM ACCESS COMPUTER STORAGE, PRRAYS, THESES

IDENTIFIERS: (U) %SG(Regular Structura Generators), Fipelined arrays, DBE(Design By Example), Delayed binding.

AD-A176 838

AD-A170 837

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PAGE 21 EVN34M

SEARCH CONTROL NO. EVN34N DTIC REPURT BIBLIOGRAPHY

> ... IT INUED AD - A170 838

17/71 AD-A170 833

ion, Calls, Adders, Interface inheritance, cuit layouts, WUAFOSA220583, PEB1102F Macro abatr Decoupling.

TEXAS UNIV AT AUSTIN DEPT OF AEROSPACE ENGINEERING AND FNGINEERING MECHANICS Advanced Guidance Algorithms for Homing Missiles with Bearing-only Measurements. 3

DESCRIPTIVE NOTE: Annual technical rept.,

<del>o</del> MAY 86 PERSONAL AUTHORS: Spayer, Jason L.; Hull, David G.;

AF05R-84-0371 CONTRACT NO.

2304 PROJECT NO.

43 TASK NO. AF 05 F MOP! TOR:

TR-86-0595

## UNCLASSIFIED REPORT

problem. Second, a new target-acceleration model has been developed to raplace the first-order Gauss-Markov process because the howing missile problem with angle-only toward the development of an advanced guidance system (navigation filter and guidance law) for a short-range air-to-air missile having a passive seeker (ingle-only measurements) During this year, four subjects have been investigated. First, additional experience has been gained with the modified-gain extended Kalman filter: it is becoming apparent that it works the same as or better than the extended Kalman filter for the howing missile theory on fault detection has been initiated; the intent is to use this theory to detect target maneuvers (the target maneuver appears as a fault) so that the filter measurements is nonlinear, the gui'ance law affects the performance of the filter; a new guidance law based on maximizing a measure of the size of the information matrix has been developed and has been shown to improve filter performance. Fourth, a study of the use of new vector to rotate and keeps its magnitude within bounds The research of this grant is directed normally used; this model allows target acceleration can be restarted. (Author) <u>e</u> Third,

\*HOMING DEVICES, \*KALMAN FILTERING, Ĵ DESCRIPTORS:

AD-A170 833

4J-A170 838

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DIIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN34M

AD-A170 833 STINUED

PURDUE UNIV LAFAYETTE IN SCHOOL OF ELECTRICAL ENGINEERING

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AD-A170 831

BEARING(DIR' N), AIR TO AIR MISSILES, GUIDANCE, PASSIVE SYS! ALGORITHMS

WJAF05R2304A3, PEB1102F

DENTIFIERS

(U) Investigation of a New Concept in Semiconductor Microwave Oscillators.

· DESCRIPTIVE NOTE: Interim rept.,

NOV 65 4P

PERSONAL AUTHORS: Cooper, James A. , Jr;

CONTRACT NO. AFOSR-85-0193

PROJECT NO. 7305

TASK NO. C1

MONITOR: AFOSR TR-88-0597

## UNCLASSIFIED REPORT

characterization of a new type of millimater-wave characterization of a new type of millimater-wave semiconductor oscillator, the so-called 'Contiguous-Domain' Transferred-Electron Oscillator. To date, the only operational information we have about this device has been derived from computer nimulation, and therefore our chjectiva is to obtain experimental verification. The device is interesting (and potentially important) because it operates in a fundamentally different way from any existing semiconductor oscillator device, with the result that it should be capable of very high frequency oscillation over 100 GHz) without the requirement for sub-micron drift dimensions. In addition, the oscillations are not based on a transit-time effect, and thus the frequency can be changed during operation by simply changing the rate at which carriers are admitted into the drift channel. The structure is similar to a conventional daks MESFET or MODFET, except that the gate source and the other near the drain. We will not describe source and the other near the drain. We will not describe reader to the original proposal and to the enclosed article.

DESCRIPTORS: (U) \*MICROWAVE OSCILLATORS, \*FIELD EFFECT TRANSISTORS, \*GALLIUM ARSENIDES, COMPUTERIZED SIMULATION.

AD-A170 831

AD-A170 833

# SEARCH CONTROL NO. EVN34M DTIC REPURT BIBLIOGRAPHY

CONTINUED AD-A170 831

6/10 **7**/0 AD-A170 830

ELECTRONS

(U) CDTED(Contiguous Domain Transferred Milator), Drains, Sources, Resistive gates, CSR2305C1, PE81102FR Electron 0 Domaine, k DENTIFIERS

2/3

OHIO STATE UNIV RESEARCH FOUNDATION COLUMBUS

(U) Distributed Knowledge Base Systems for Diagnosis and Information Retrieval.

Annual rept. 1 Jul 84-30 Jun 85, DESCRIPTIVE NOTE:

104P SEP 85 Chandrasekaran, B.; PERSONAL AUTHORS:

AF05R-82-0255 CONTRACT NO.

2364 PROJECT NO.

ž TASK NO.

TR-86-0509 AFOSR MONITOR:

## UNCLASSIFIED REPORT

qualitatively about the behavior of systems of components. This approach and the more classical approach of further prog: .s in developing an architectural framework for diagnostic reasoning. 3) We have elucidated some of the criteria that govern how design plans are selected for further refinement in design problem solving. 4) We have identified a number of generic tasks into which the highermation processing activity of most of the expert systems can be decomposed. These generic tasks are at a much higher level of abstraction, and this should make classification. We compare the pattern recognition and AI qualitative simulation are complementary. 2) We have made ISTRACT: (U) During the year, progress was made in our research on distributed approaches to knowledge-based problem-solving in the following areas: 1) We have knowledge acquisition and explanation for expert systems master. 5) We have clarified how symbolic qualitative developed an approach called consolidation to reason knowledge-based processing helps when problems get complex by considering the concrete task of approaches to the problem. (Author)

SCRIPTORS: (U) \*REASONING, \*COMPUTER AIDED DIAGNOSIS...
\*PROBLEM SOLVING, \*INFORMATION SYSTEMS, INFORMATION
RETRIEVAL, FUNCTIONS, DECISION MAKING, COMPUTER AIDED
DESIGN, LOGIC DEVICES. DATA BASES, ARTIFICIAL DESCRIPTORS: (U)

AD-A170 830

AC-A170 831

# SEARCH CONTROL NO. EVN34M DIIC REPORT BIBLIOGRAPHY

CONTINUED AD-A170 830

INTELLIGENCE, QUALITATIVE ANALYSIS, SIMULATION

Distribut or retrieval, LPN-05URF-783180/714659, PE61102F, WUAFOSR23-18-1 DENCIFIERS

1/4 AD-A170 819 PRINCETON UNIV NJ DEPT OF CHEMICAL ENGINEERING

(U) Organosulfur Chemistry on W(211) Surfaces, 1. Comparison of Methanathiol and Mathanol,

9 2

Benziger, Jay B. ; Preston, Richard E. PERSONAL AUTHORS:

AF0SR-82-0302 CONTRACT NO.

2303 PROJECT NO.

MONITOR:

42

TASK NO.

AF0SR TR-88-0581

## UNCLASSIFIED REPORT

JPPLEMENTARY NOTE: Pub. in Jnl. of Physical Chemistry, v88 n23 p5002-5010 1885. See also 2, AD-A170 818. SUPPLEMENTARY NOTE:

BSTRACT: (U) The reactions of methanol and methanethiol on clean, oxided, sulfided, and carbided W(211) surfaces were studied by LEED. AES, and TPR. Adsorption occurred by an oxidative addition it which the hydroxyl or sulfhydryl hydrogen was removed forming methoxy and methanethioxy intermediates. Clean W(211) was a very strong reductant totally decomposing the molecules. Adsorbed oxygen oxidized the surface making it a weaker methoxy and methanethloxy intermediates decomposed by C-O or C-S bond saission forming adsorbed methyl groups which either decomposed or were hydrogenated to form methane. At temperatures above 500 K methyl groups recombined and C2 hydrocarbon products evolved. Surface oxides and carbides oxidized methoxy to formaldehyde and C0, but no surface oxidized methanethioxy to thioformaldehyde or CS. reducing agent so that alkoxy and thioxy intermediates were stabilized. An epitaxial surface oxide was a mild oxidant compared to clean W(211); this surface oxidized stabilized both alkoxy and thioxy intermediates as well reduced methanol adsorption. Surfaces with adsorbed sulfur methanethiol. This adsorption suggests the formation of disulfide species. Carbided W(211) as oxidizing methanol to formaldehyde. The adsorbed methanol to formaldehyde. Adsorbed sulfur severely ABSTRACT:

AD-A170 830

## SEARCH CONTROL NO. EVN34M DITC REPORT BIBLIOGRAPHY

1/4 AD-A170 818 Ξ OUT • SURFACE CHEMISTRY • SURFACE REACTIONS.

OUTIOLS, • CARBINOLS, TUNGSTEN, ADSORPTION,

OUTION REACTIONS, REDUCTION (CHEMISTRY), CONTINUED CARBONS AD-A170 818 DESCRIPTORS • METHANE DXIDATIC SULFUR, 1

Methanethiols, Methanol, PEG1102F Đ, IDENTIFIERS WUAFOSR2

PRINCETON UNIV NJ DEPT OF CHEMICAL ENGINEERING

Organosulfur Chemistry on W(211) Surfaces. 2. A Comparison of Benzene, Thiophene, and Tetrahydrothiophene,

10

PERSONAL AUTHORS: Preston, Richard E.; Benziger, Jay B.;

AFUSN-82-0302, NSF-CPE82-17384 CONTRACT NO.

2302 PROJECT NO.

77 TASK NO. AFOSR MONITOR:

TR-86-0582

## UNCLASSIFIED REPORT

JPPLEMENTARY NOTE: Pub. in Jnl. of Physical Chemistry, v89 n23 p5010-5017 1985. See aiso 1, AU-A170 819. SUPPLEMENTARY NOTE:

sulfided W(2)1) surfaces were studied with LEED. AES, and temperature programmed reaction. Benzene and thiophene sppear to absorb as bases making ni-bonds to the surface Benzene decomposed to yield adsorbed carbon and hydrogen. Thiophene appeared to undergo electrophilic attack at the 2-position forming a carbon bound surface intermediate. This surface intermediate was desulfurized and the THT. These results suggest that the surface reactivity and subsequent desulfurization of thiophene is controlled by electrophilic attack on the aromatic ring, and the ensuing reduction of resonance stabilization facilitates product. Adsorbed oxygen and sulfur inhibited reaction of resulting hydromarbon surface intermediate underwent C-C bond scission forming C3 hydrocarbons as the dominate description product. The electrophilic attack at the 2dimethylthiophene. Adsorbed oxygen and sulfur enhanced the adsorption of benzene and thiophene by making the surface more acidic. Tetrahydrothiyhene (THT) appear to adsorb as a base, forming a bond batkwen the S(3p) electrons and the surface. Desulfurization of adsorbed THT led to C4 hydrocarbons as the dominate desorption position was shown by methyl group elimination from 2,5-The interactions of benzene, thiophene, and tetrahdyrothiophene with clean, oxidized, and ABSTRACT: (U)

AD-A170 B18

AD-A170 818

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# SEARCH CONTROL NO. EVN34M DIIC REPORT BIBLICSRAPHY

CONTINUED AD-A170 813

. [4] Sulfur r (U) \*SURFACE CHEMISTRY, \*SURFACE REACTIONS, CIOPHENES, TUNGSTEN, INTERACTIONS, ADSORPTION, 1, SUBSTITUTION REACTIONS, ADSORPTION, CON, HYDROCARBONS, REPRINTS DESULFUE · BENZEN! DESCRIPTOF DECOMPO

(U) Thick w/Tetrahydro, Electrophilid right02f, Wux. SR2302A2 reaction. IDENTIFIEF

AD-A170 816

ILLINDIS UNIV AT CHICAGO CIRCLE DEPT OF MATHEMATICS STATISTICS AND COMPUTER SCIENCE

(U) On Bounds for the Efficiency of Block Designs for Comparing Test Treatments with a Control.

DESCRIPTIVE NOTE: Technical rept.

**JUN 86** 

Stufken, John ; PERSONAL AUTHORS:

TR-86-05 REPORT NO.

AFPSR-85-0320

CONTRACT NO.

2304 PROJECT NO.

TASK NO.

MONITOR:

AF0SR TR-88-0578

## UNCLASSIFIED REPORT

balanced incomplete block designs, which are used for comparing a control trastment with a set of test trastments. Under the A Criterion a condition is established that enables us to determine the most efficient augmented design and we suggest some methods to compute a lower bound for the efficiency of these designs. For 3 < or \* k > or \* k > we \* k + lower bound for the parameters of the most efficient designs with a lower bound for the ficiency or their efficiency or if known, mention their optimality.

SCRIPTORS: (U) «CONTROL THEORY, «SYSTEMS ENGINEERING, ALGMENTATION, OPTIMIZATION, EFFICIENCY, LEAST SQUARES DESCRIPTORS: (U) METHOD urMIIFIERS: (U) \*Block design, BIB(Balanced Incomplete Block), BIBD(Balanced Incomplete Block Design), PE61102F, WUAF05R2304A5 IDENTIFIERS: (U)

SEARCH CONTROL NO. EVN34M DTIC REPORT BIBLIOCRAPHY

AD-A170 815

PENNSYLVANI . STATE UNIV UNIVERSITY PARK DEPI METEOROLOG, Sum Rules for Optical Extinction and Scattering by Small Par ticles.

DESCRIPTIVE NOTE: ANNUAL FEET, 16 May 84-18 May 85,

144 16 16

PERSONAL AUTHORS: Bohran, Crafg F.;

AF 05R-84-0145 CONTRACT NO.

**9**07.7 PROJECT NO.

3

TASK NO.

MONITOR:

AF. R TR e8-0517

## UNCLASSIFIED REPORT

coefficients expend on various Bassel functions and their derivatives. The usual approach to computing scattering coefficients is to compute the Bassel functions by recurrence. The Bassel functions in the expressions for the scattering coefficients satisfy recurrence relations. by an orbitrary homogeneous sphere (Mie theory) yields an infinite set of coefficients. These scattering a relations can simplify scattering must be determined by extensive calculations. In if the recurrence relations are stable, or downward. These matters are for further The solution to the problem of scattering themselves autisfy recurrence relations. Whether or not wan that the scattering coefficients Investigati... It has been the recurre calculation: It is not k. either upv.

"JKE, EXIINCTION, MATHEMATICAL ANALYSIS, BESSEL FUNCIA IS, CHEFFICIENTS = OBSCURATION DESCRIPTORS:

Sum rules(Physics), Recurrence towars Kronig relations, PEB1102F, relations, Fr. DENTIFIERS:

AD-A170 815

20/3 20/12 AD-A170 813

BROWN UNIV PROVIDENCE RI DIV OF EXAINEENING

(U) Picosecond Nonlinear Resonant Interactions in Semiconductors.

Annual rept. no. 3, 1 Jan-31 Dec 84, DESCRIPTIVE NOTE:

MAR 86

Hurmikko, Arto V. PERSONAL AUTHORS:

CONTRACT NO. F49620-82-C-0044 2306 PROJECT NO.

TASK NO.

MONITOR:

AF0SR TR-88-0525

## UNCLASSIFIED REPORT

properties of samiconductors containing magnetic elements. Emphasis was placed on the interaction of such materials with ultrashort pulses of laser radiation in order to selected nonequilibrium conditions. We hoped to generate novel results through experimental research for time spectroscopy with picosecond laser pulses. (Author) applications to fast optomisectronic devices. The mixt is crystal semiconductors (Cd, Mn)Sm and (Cd, Mn)Tm were used. The contract work has generated a number of 'firsts', e.g., We measured the formation of local microscopic magnetically oriented domains through realstudy coupled electronic and magnetic excitations under This research was aimed at advancing understanding and utilization of selected optical

\*\*SCRIPTORS: (U) SEMICONDUCTORS, \*MAGNETIC MATERIALS.
\*BAND THEORY OF SOLIDS, \*MAGNETIC DOMAINS, CADMIUM COMPOUNDS, MANGANESE COMPOUNDS, LIGHT PULSES, SELENIDES, PULSED LASERS, TELLURIDES, NONLINEAR SYSTEMS.
\*\*SPECTROSCOPY, REAL TIME, EXCITONS, DYE LASERS DESCRIPTORS:

Cadhium manganese selenide, DMS(Diluted Magnetic Semiconductors), BMPTBound Magnetic Polarons), Resonant interactions, Cadmium Manganese telluride, Neutral impurities, Free excitons, Ionic impurities, Bound excitons, Coulomb centers, Potential Wells, 3 (DENTIFIERS:

SEARCH CONTROL NO. EVN34M D"IC REPORT BIBLIOGRAPHY

Polarions, C

A compensation, PEB1102F, WUAF0SR2308C2

<u>-</u> 20/12

AD-A170 812

ILLINOIS UNIV AT URBANA COORDINATED SCIENCE LAB

(U) High-Quality GaAs MESFET's Grown on Silicon Substrates by Molecular-Beam Epitaxy,

4

PERSONAL AUTHORS: Morkoc, H. ; Peng, C. K. ; Henderson, T. ; Kopp, W. ; Fischer, R. ;

F49620-83-K-0021 CONTRACT NO.

2305 PROJECT NO.

TASK NO.

AF0SR TR-86-0541 MONITOR:

## UMCLASSIFIED REPORT

JPPLEMENTARY NJTE: Pub. in IEEE Electron Devices Letter, vEOL-6 n7 p381-383 Jul 88. SUPPLEMENTARY NOTE:

thick GaAs were grown on 3-in-diam(100) Si substrates misoriented by 4 deg toward (110). The total morphilogical defect density observed was (2000 per sq.cm) comparable to what is obtained on a typical GaAs grown on GaAs in this particular MBE process. The electron mobilities and doping levels were 3550 sq cm/Vs and 3 x 10 to the 17 power per cu cm, which are comparable to GaAs on GaAs of equivalent parameter MESFET's with a 1 micron gate lengths, exhibited good saturation and pinch off, no observable light sensitivity, and transconductances of about 200 mS/mm. These results are believed to be the first report of such excellent MESFET quality GaAs directly grown on St. (Author) ABSTRACT: (U)

ESCRIPTORS: (U) •GALLIUM ARSENIDES, •SILICON,
•MOLECULAR BEAMS. •EPITAXIAL GROWTH, \*FIELD EFFECT
TRANSISTORS, SUBSTRATES, GATES(CIRCUITS).
PHOTOSENSITIVITY. REPRINTS DESCRIPTORS:

IDENTIFIERS: (U) Transconductances, MESFETA, PEB1102F., WUAFOSR2305C1

AD-A170 812

AD-A170 813

# SEARCH CONTROL NO. EVN34M DTIC REPORT BIBLIDGRAPHY

CONTINUED AD-A170 811 20/8 AU A170 811

YALE UNIV NEW HIVEN CONN

IDENTIFIERS: (U) (U) Population Intersions in Laser-Initiated Vacuum Arcs.

Laser produced plasmas

Final rept. 1 Feb 81-31 Jan 88, DECCRIPTIVE NOTE:

2 K

Krishnan, Mahadavan ; Haller, Gary L. ; PERSONAL AUTHORS:

AFI. 4 81-0077 C. .: TRACT NO.

2301 P. JECT NO.

AF0SR TR-88-C 22 F. .I TOR:

## UNCLASSIFIED REPORT

redustion from a that ion. Fluorescence was measured at a wavelengths a cil pumped by Al III. A vew class of other colorycled is a was identified, in Be like lons, with a velengths from 21774 in C III pumped by Mn VI, to 200 A in Mg IX pumped at Al XI. Fluorescence and small signal itation. By isoelectronic scaling, it to produce soft X-ray lasers using the sted by this research. Photopumped eto be the most efficient soft X ray south arcs. Inversion mechanisms include and resonant photoexcitation using Ithe is in C III pumped by Mn VI. Finally, vas demonstrated in C III at 2177 and radiation. Sign: cant gain was measured on the Baleer innes M sub also. and M sub beta in expanding, laser moduced plasma. of carbon/polyethylene. Research then are first UV lasers to be pumped by sallation inversions were studied in eration pumping in expanding, laser laser initiated conced thasma SIN METO MEASUR laxers in the f. three body reco isser oscillati issod ad pincis rinciples elucitated 1:33A. These ar AL STRACT: (U)

\*ELECTRIC ARCS, \*LASER PUMPING,
5. RECOMBINATION REACTIONS,
ETHYLENE, LASER INDUCED FLUORESCENCE, · LIRAVIOLET 1 A RIPTORS

LEUGRESCENCE, F. FETHY LETTRAVIOLET RADISTION

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AD-A170 811

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PAGE . 30

**EVN34M** 

# SEARCH CONTROL NO. EVN34M DITIC REPORT BIBLIUGRAPHY

AD-A170 809 12/1	PITTSBURGH UMIV PA CENTER FOR MULTIVARIATE ANALYSIS	(u) Partern Recognition Based on Scale Invariant Discriminant Functions.
AD-A170 810 17/2	CALIFORNIA : .: V LOS ANGELES SCHOOL OF ENG MEERING AND	APPLIED SCIPE (II) Performs a Evaluation and Control of Distributed

s Evaluation and Control of Distributed

(U) Performs

Computer

Annual rept.

DESCRIPTIVE N

SEP BS

DESCRIPTIVE NOTE: Technical rept.,

APR 88

PUKKITA, Tarmo M. ; Ran, C. R. PERSONAL AUTHORS:

TR-88-09 REFORT NO.

Rubin, Lithak , Gerla, Mario

...

PERSONAL AUTI-

AF USR - 82 : 0304 1 1. A - ENG-85-30

> CONTRACT NO PROJECT NO.

PEPORT NO

4 3C 4

F49820-85-C-0008 CONTRACT NO.

2304 Š PROJECT NO TASK NO.

AF0SR TR-88-C575 MONITOR:

## UNCLASSIFIED REPORT

lambda'> 0. Explicit expressions are obtained for the densities of what are called Angular Gaussian, Compositional Gaussian, Type 1 and Compositional Gaussian. BSTRACT: (U) Some probability models for classifying individuals as belonging to one of two or more populations using scale invariant discriminant functions are considered. The invasigation is motivated by practical situations where the observed data on an individual are in the form of ratios of some basic measurements or neasurements scaled by an unknown nonnegative numl. If The probability models are obtained by Type 2 distributions. (Author) ABSTRACT:

guter communication network architectures

bath theoremulations and models and

lewestigat. under this

ABSTRACT:

and evalua:

DESCRIPTORS

at and practical importance. A lange

During the 1982-1985; performance-period SR Grant, we have carried out research and obtained many significant results, of

UNCLASSIFIED REPORT

0580

MONITOR: TASK NO.

ingl schames have been developed, analyzed

SCRIPTORS: (U) \*DISCRIMINATE ANALYSIS, \*PROBABILITY DISTRIBUTION FUNCTIONS, PATTERN RECOGNITION, POPULATION(MATHEMATICS), MATHEMATICAL MODELS, RANDOM VARIABLES, NORMAL DISTRIBUTION, ESTIMATES, DENSITY DESCRIPTORS:

LANILOCA: Area Networks), Packet radios,

ots, Token rings, Token busses

Network pr

DENTIFIERS

INTEGRATED \*COMMUNICA

CIRCUITS.

VIDEO INTE

WUAF0SR2304AB, PEB1102F IDENTIFIERS: (U)

AD-A170 809

PAGE

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AD-A170 819

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# SEARCH CONTROL NO. EVH34M DITIC REPURI BIBLIDGRAPHY

CONTINUED

1/4 AD A110 BOB

AD-A170 809

IDENTIFIERS: (U) Partition functions, Steel 1264A, Electronic partitioning ISYLVANIA STAT. L'HIV UNIVERSITY PARK DEPT UF

in the Electronic Partitioning of Iron Matrix Effect. In the Electronic Partitioning Atoms Desorbly from Surfaces by Energetic Ion Boundardment. . 2

41 STRY

lechnical rept. 1 Nov 84-31 Oct 85 IPTIVE NOTE:

\* Imock, Fred M. ; Pappas, David L. ; HAL AUTHORS: 99 ,

AFE ( 85-0028, NSF-CHEB1-08382 LACT NO

. cgrad, Nicholas ;

COT NO. 2303

7 2 AFOSR TR:88-C Ĭ.

## CHICLASSIFIED REPORT

Pub. in Analytical Chemistry, v57 r13 . 368-2874 Nov . 5 LEMENTARY NOTE

actronic partitioning of sputtered Fe atoms is examined, surface sturn are clean and air exposed collaboration in Midfe (iii) and NBS 1264a steel. In character to the yeld dramatically by surface in all dramatically by surface contamination, a fraction of ejected ground state Fe characterists in the clean is at are subjected to 800 eV argon Ion and the clean is set are subjected to 800 eV argon Ion. acter, with effective temperatures by to 100 K. The populations of te atoms of the atoms. unlations of ejected metastable toms are characterized by near cited state f ultzmann in ct JITIMBUN GIST. 1400 + or - 200 uttered from , Lout 700 + or

\*\*DESORPTION, \*IRON, \*TON BUMBAROMENT.
STEEL, IRON INTERMETALLICS, NICKEL
\*\*\*LEZMANN EQUATION, REPRINTS RIPTOPS: (U. CON, SPUTTER)

A170 808

A5-A170 608

EVN34X 33 PAGE

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## SEARCH CONTROL NO. EVN34M DIIC REPORT BIELIOGRAPHY

AD-A170 BOB CONTINUED	show that for a given incident shock Mach number, the highest pressure is achieved through a DMR instead of a RR. An abolication of reflections in pseudo-stationary	Flow to the interaction of spherical blast waves with a piener surface is shown and discussed.
)71A-On	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	100
•	I SEVIEW (CATAKTO) INST FOR AEROSPACE	Pseudo-Stat - Jry Oblique-Shock-wave Reflections in a Polystosic c Suifur Hexafluoride.
1170 BOS	DRONTO LAIV IS SSVIEW	Pseudo-Stat

(U) Pseudo-Stat: Lry Oblique-Shock-Have Reflections in a Polystosic v. v. Sulfur Hexafluoride.

STUDIES

Interim rept., DATICALINATIVE MOTE

.t. T. C. d. . . \_ SONAL ALTHURS 24 NY

ESCRIPTORS: (U) \*SHOCK WAVES, \*REFLECTION, \*SULFUR COMPOUNDS, \*FLUORIDES, SHOCK TUBES, HIGH VELOCITY, PRESSURE, TEMPERATURE, MACH NUMBER, FLOW, BOUKDARIES, BLAST WAVES, INTERFEROMETRY, GASES, NUMERICAL ANALYSIS, VIBRATION, CANADA

DESCRIPTORS: (U)

WUAFUSR2307A1, PEB1102F

IDENTIFIERS: (U)

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TR-56 : 4/2 AF OSR : 11TOR:

JANCE ASSIFIED REPORT

conducted in the range of incident shock wave Mach number 1.25 kmb in the range of incident shock wave Mach number 1.25 kmb subject their subject was a 47 km3 wedge angle 4 deg < their subject was 47 kmg with initial properties of their subject was 1 to 10 t vere observed. These were studied with terferograms using a 33 cm dia field of interferometer. The isopycnics obtained stributions along the wedge surface are various reflection processes. Four reflections in lifur hexeliuoride were investigated axperiments: 1y -- 1 cuentically, Over 150 experiments were conducted in the call Appendix of the temperature of or with the same wedge angle and similar compared. The analytical transition the four types of shock-wave tablished up to M sub s = 10.0 for fional equilibrium sulfur hexafluoride sults of the second triple point system its in argon, air carbon dickide and Svendy-stationary oblique: shock-wave refiection wer Hach IN-Middle z and the densit sulfur hexaflu Licumdaries be: axperimental r rozen and vit. infinite-frir The numberical reflection (B five Mach-Zehi presenter, for 3 / BSTRACT:

AD-A170 808

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AU-A170 808

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# SEARCH CONTROL NO. EVN34M DTIC REPORT BIBLIOGRAPHY

\*FERNI SUAFACES, \*GALLIUM AKSENIDES, \*SCHOTTKY BARRIER DEVICES, INTERFACES, GATES(CIRCUITS), DRIFT, NONLINEAR SYSTEMS, REPRINTS, BIAS

CONTINUED

AD-A170 BOS

PENTIFIERS: (U) Modfet devices, Alum'rum gallium arsenide, Modulation doping, PEG1102F

IDENTIFIERS.

AD-A170 B

ILLINDIS UMIV AT URBAKA COORDINATED SCIENCE LAB

(U) Quasi Farmi Level Bending in MOOFET's and Its Effect on Fk: Transfer Characteristics.

Ponse, F. ; Massellink, W. T. ; Morkoc, Hadis PERSONAL ALLEORS:

F48620-43-K-0021 CONTRACT 1:1

2308 PROJECT NO

<del>.</del> TASK NO.

18 - 86-0538 MONITOR:

## UNCLASSIFIED REPORT

Pub. in IEEE Transactions on Electron Devices, vED-32 n6 p1017-1023 Jun 85. SUPPLEMENT OF NOTE:

ISTRACT: (U) Using Schockley's diffusion/drift model, we calculate the quasi-fermi level (lenef) bending in the deplate: Algads barrier layer of daAs/Algads MODEL's. We show this the assumption of a constant innef from the heteroi. Age through the barrier layer is not justifit; when the gate is moderately forward biased. as both in the vicinity of the heterointerface " a are in good quantitative agreement with the ET transfer characteristics and necessitates same height present at the gate metal-or interface. Experimental results on AlgaAs/ Once the carrier-layer conduction band edgs at the gate interface, talls balow that at the heterointerface, the rations for the gate control mechanism. As a nit electron concentrations in the MODFET it a gate current is suppressed not only by the gate metal. This has important consequences despite the gate being forward biased with close to or larger than the Schottky-barrier theoreti il calculations. (Author) channel obtained voltages height, E POOR NEW COUR 11 25 ù Tor the result.

\*FIELD EFFECT TRANSISIORS, \*DOPING 3

AD-A170 BUS

AD-A:70 805

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SEARCH CONTRUL NO. EVN34M DTIC REPORT BIBLIOGRAPHY

9/18 **6**/ 10 AD-A170 804

HARVA: MEDICAL SCHOOL BOSTON NA DEPT OF PHYSIOLOGY AND 1001 (U) Phy wacological Resetting of the Circadian Sleep-Wake Cyc: a DESCRIPTIVE NOTE: Final technical rept. 1 Apr 83-31 Mar

27P MAY 88

PERSONAL AUTHORS: Moore-Ede, Martin C. ;

AF05R-83-0184 CONTRACT NO

2312 PROJECT NO

TASK NO.

AF.3SR MONITOR:

## TR-86-0645

UNCLASSIFIED REPORT

ISTRACT (U) This research program developed strategies for reset the timing of the circadian (approximately 24-hour) as represented the circadian (approximately 24-hour) as fully each of narry predetermined that in the 24-hour (asy. This capability would be of direct benefit in ministring the deleterious effects of jet lag and could be examined that the program of the could be could be able to a full that the could be of the country of the could be could be contacted that the contacted t primate primate, the squirrel monkey (Saimiri sciureus). With a vali defined circadian neurophysiology and sleepwake proviology. This animal has a consolidated sleep-wake cycle that is comparable to that in humans, During the throwest period or funding, the circudian sleepthe three vear period or funding, the direction sleep-wake or collation in squirrel monkeys was characterized and the rate of resynchronization after phase shifts of staffed 14 hours a day. The studies utilized a diurnal environ and light-dark cycles was determined.

DESCRIPTOF; (U) •CIRCADIAN RHYTHMS, •JET LAG, •DRUGS SLEEP, Þ-SI, PHYSIOLOGICAL EFFECTS, SQUIRREL MONKEYS, NEUROPH-JIOLOGY

JENTIFIE . (U) Muramyl Dipeptide, Antsomycin, Sodium Valproare: WUAFOSR2312A1, PEB1102F **CDENTIFIE** 

AD-A170 804

AD-A170 800

STATE UNIV DF NEW YORK AT STONY BROOK DEPT OF APPLIED MATHEMATICS AND STATISTICS

(U) The M.Iti-Armed Bandit Problem: Decomposition and Computation.

DESCRIPTIVI NOTE: Research rept. Jul 84-Sep 85,

SEP 85

PERSONAL AUTHORS: Katehakis, Michael N.; Veinott, Arthur F.

AMS-85-58 REPORT NO.

AF05R-84-0136, NSF-ECS83-12356 CONTRACT NO.

2304 PROJECT NO.

TASK NO.

TR-88-0523 AF05R MONITOR:

### UNCLASSIFIED REPORT

ABSTRACT: (U) The multi-armed bandit problems arises in sequentially allocating effort to one of N projects and sequentially assigning patients to one of N treatments in one optimal policy for the N-project problem, an N-cimensional discounted Markov decision chain, is determined by the following largest-index rule. There is an index for each state of each given project that depends only on the data of that project. In each period one allocates effort to a project with largest current index. The purpose of this paper is to give a short proof of this result and a new characterization of the index of a project in state i, viz., as the maximum expected present value in state i for the restart-in-i problem in which, in each state and period, one either continues allocating effort to the project or immediately restarts the project in state i. Moreover, it is shown that an approximate largest-index rule yields an approximately optimal policy. These results lead to more efficient methods of computing the indices on-line and/or for sparse transition matrices in large state spaces than have been suggested heretofore. By using a suitable

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# SEARCH CONTROL NO. EVN34M DIIC REPORT BIBLIDGRAPHY

	implementation of successive approximations, a policy whose $a_{\rm N}$ and present value is within 100 epsilon % of the maxi a possible range of values of the indices can be found. The with at most (N+T-1)TM operations where M is the car of operations required to calculate one approximation. Fix (In epsilon)/(In a) and $0.< a < 1$ is the discontinuous of the discontinuous special or a second of the discontinuous special second of the discontinuous second or a second or
CUNTINUED	-
AD-A170 2.03	the maxi the maxi be found if is the apperixter

(U) \*SEQUENTIAL ANALYSIS, \*SCHEDULING, C DECOMPOSITION, CLINICAL MEDICINE, H(MATHEMATICS), OPTIMIZATION, INDEXES COMPUTAT: APPRIXIN

.Multi armed bandit problem <u>9</u> IDENT IF LERS

9/3 AD-A170 802 DUKE UNIV DURHAM NC DEPT OF COMPUTER SCIENCE

DESCRIPTIVE NOTE: Annual rep., 1 Jul 84-30 Jun 85, (U) Search Algorithms and Their Implementation.

AUG BB

PERSONAL AUTHORS: Loveland, D. W.;

AF05R-83-0205 CONTRACT NO.

PROJECT NO.

2

TASK NO.

TR-86-0530 AFOSR MONITOR:

## UNCLASSIFIED REPORT

determination for rule-based systems should be completed this coming year. Work continues on approximation algorithms for the teut-and-treatment problem and a new affort is underway in learning mechanisms with a focus on a method for comparing learning mechanisms that has already yielded a promising new learning strategy. correcting natural language input using expectations, (2) fast algorithms for finding some boundary sets of binary monotone set functions, and (3) a review of sutoratic programming techniques. Work on search with limited Papers completed this year include (1) resources and a study of automating rule strength 9 ABSTRACT:

DESCRIPTORS: (U) \*SEARCHING, \*ALGORITHMS, NATURAL LANGUAGE, INPUT, MONOTONE FUNCTIONS, AUTOMATIC PROGRAMMING, ARTIFICIAL INTELLIGENCE

Expert systems, WUAFOSR2304A7, PES1102F IDENTIFIERS: (U)

# DITC REPORT BIBLIDGRAPHY SEARCH CONTROL NO. EVN34M

ND-A170 BOT 6/5 12/1 STATE TOTA OF NEW YORK AT STONY BROOK DEPT OF APPLIED MATHEMATICS AND STATISTICS

(U) Compacting Optimal Sequential Allocation Rules in Clinical Trials.

DESCRIPTIVE NOTE: Research rept. Jul 84-Sep 85,

SEP 85 13

PERSONAL AJTHORS: Katehakis, Michael N.; Derman, Cyrus;

REPORT NO AMS-85-59

CONTRACT NO. AF058-84-0138

PROJECT NO 2304

TASK NO. A5

MONITOR: AFOSR TR-68-0521

## UNCLASSIFIED REPORT

traitments in clinical trials is formulated as a traitments in clinical trials is formulated as a discourted bandit problem that was studied by dittins and Jones. Fre problem involves comparison of certain state departs indices. A recent characterization of the index is used to calculate more efficiently the values of these indices.

DESCRIPT PS: (U) \*HEDICAL SERVICES, \*COMPUTATIONS, \*CLIN: \*C MEDICINE, INDEXES, ALLOCATIONS, OPTIMIZATION, BAYES \*\*ESREM, TABLES(DATA), DYNAMIC PROGRAMHING, STATISTESAL ANALYSIS

AD-A170 800 11/8

CORNELL UNIV ITHACA NY DEPT OF MATERIALS SCIENCE AND ENGINEERING

(U) Mechanistic Understanding o. Powder Compaction in Metals. DESCRIPTIVE NOTE: Arrual technical rept. 1 Apr 84-15 feb

MAR 66 37P

PERSONAL AUTHURS: Raf, Rishi:

CONTRACT NO. AFOSR-84-0133

PROJECT NO. 2308

TASK NO. A1

MONITOR: AF0SR TR-86-0505

## UNCLASSIFIED REPORT

ABSTRACT: (U) In this, the first annual report, results from hot-pressing experiments on NixAl(1-x) powders are described. The stoichiometry of the alloy is varied in the range 0.84<x0.52. The change in composition allows us to change the diffusion coefficient by nearly two orders of magnitude. The principal mechanisms of powder compositions. The principal mechanisms of powder two mechanisms can, therefore, be separated by varying two mechanisms can, therefore, be separated by varying the composition. Also, the dislocation mechanism is expected to dominate when densitieation is carried out at any except of the dislocation of the result of the dislocation is carried to influence microstructure evolution by dynamic recrystallization. The results doscribed in this report demonstrate that the diffusional and dislocation mechanisms can indeed be separated by changing the stress and the composition. At high stresses, we have found evidence of precipitation of new grains at interfaces. Current and future work is being directed toward understanding the role of shear strain in densification and in microstructure evolution during powder compaction.

DESCRIPTORS: (U) \*POWDER METALS, \*HOT PRESSING, NICKEL,

AD-A170 800

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# DITC REPORT BIBLIDGRAPHY SEARCH CONTROL NO. EVN34M

AB-A170 800 CONTINUED

ALUMINUM, COL ACTING, DENSITY

IDENTIFIERS: (4) Densification, WUAFOSR2308A1

AD-A170 787 7/4

OPTICAL SOCIETY OF AMERICA WASHINGTON D C

(U) Proceedings of the Topical Meeting on the Microphysics of Surfaces, Beams, and Adsorbates Held in Santa Fe, New Mexico on 4-6 February 1945.

:

DESCRIPTIVE NOTE: Final rept. 1 Nov 84-18 Dec 85,

DEC 85 208P

PERSONAL AUTHORS: Quitnn, Jarus #. ;

CONTRACT NO. AFOSR-85-0018

PROJECT NO. 2303

TASK NO. A2

MONITOR: AFOSR TR-86-0469

## UNCLASSIFIED REPORT

SSTRACT: (U) The Topical Meeting on Microphysics of Surfaces, Beams, and Adsorbates was organized within the interdisciplinary area of molecule/surface interactions finduced, or studied, by laser and ion beam techniques. Especially emphasized was the molecular physics and electro magnetism of beam activated chemical reactions for applications in fabrication of semiconductor devices, in photocatalysis, and in optical recording. Emphasis was on the laser spectroscopy or molecular collision and reaction processes on surfaces, new sensitive or high resolution spectroscopies for studies of adsorbates, and optical methods applied to surface characterization.

DESCRIPTORS: (U) \*SURFACE CHEMISTRY, \*WOLLCULAR PEAMS, \*ADSORBATES, ETCHING, SILICON, SPUTTERING, HALOGENS, ION BOWBARDMENT, EPITAXIAL GROWTH, CADMIUM TELLURIDES, MERCURY COMPOUNDS, VAPOR PHASES, CARBON MONOXIDE, STARK EFFECT, CHLORINE, SYMPOSIA, TRIMETHYLALUMINGM

IDENTIFIERS: (U) LITD(Laser Induced Thermal Description), Spectroelectrochemisty, Cadmium mercury tellurides, Second harmonic generation, PE81102F

# SEARCH CONTROL NO. EVN34M DIIC REPORT BIBLIOGRAPHY

AD-A170 778 14/5 20/8 AD-A170 782

BATTELLE COLUMBUS DIV OH

(U) High-Resolution Analysis or Eye Movements. (U) Land Produced X-Ray for High Resolution Lithography are: a Photolonization Laser.

DESCRIPTIVE NOTE: Finel rept. 15 Jun 83-15 Nov 84,

MICHIGAN UNIV ANN ARBOR

0/10

PERSONAL AUTHORS: Jon! des, John ;

12P

APR 86

AF05R-83-0269

CONTRACT NO.

2917

PPOJECT NO.

DESCRIPTIVE NOTE: Final rept.,

FEB 83

PERSONAL AUTHORS: Epstsin. Harold : Applebaum, Dave ;

Campbell Bernerd;

AF0SR-82-0066 CONTRACT NO.

2301 PROJECT 20

TASK NO.

AFOSR MONITOR

TR-86-0553

## UNCLASSIFIED REPORT

ISTRACT: (U) A computerized laboratory was constructed to monitor aye movements, to present visual stimuli, and to collect and record the performance of human subjects in information processing tasks. (Author)

ABSTRACT: (U)

UNCLASSIFIED REPORT

TR-88-0512

AFOSR

MONITOR: TASK NO.

¥

DESCRIPTORS: (U) \*EYE MOVEMENTS, COMPUTER APPLICATIONS, MONITORING, HIGH RESOLUTION, PERFORMANCE(HUMAN), DATA ACQUISITION, STIMULI, INFORMATION PROCESSING

WJAF0SR2917A4, PE61102F

IDENTIFIERS: (U)

ABSTRACT 1U) The majority of the project was spent invest integral laser produced x rays for high resolution lithous your. This work involved measurements over an extern a parameter matrix. Specifically, efficiency of conversions to x rays was qualified as a function of (1) laser just an energy, (2) laser pulse width, (3) plasma profile, (4) laser wavelength, (5) target atomic number, (6) initial focal area, and (7) focal ratio of the lens. Experimental research was performed on a photoionization x ray was reconcept. Specifically, a thin polysthylene, oxidicarbonate film was vaporized. Fifteen nanoseconds into its expecitum x ray pulse. Photoionization of the inner K shell of oxygen was then observed the potential efficiency of this type of laser was found to be comparatively lou.

SCRIPT AS (U) \*X RAY APPARATUS, \*LASER PUMPING, \*PHOT AS AS PHOTOIONIZATION, TRANSMESSIVITY, FOILS(MATERIALS), BERYLLIUM DESCRIPT AS

NEWTIFE S. (U) Laser produced x rays, PEB1102F, WUAFOSS 20148 IDENT IF 1

AD-A170 779

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# SEARCH CONTROL NO. EVN34M DTIC REPURT BIBLIDGRAPHY

AD-A170 778

OF TECH ATLANTA SCHOOL OF INDUSTRIAL AND RING GEORGIA IP SYSTEMS EN.

8 Bounds on Distributions of Optimal Value with Applications to Pert, Network Flows and Reliability, Stochas: Function 9

310 2F \$5

PERSONAL AUTHERS: Weiss, Gideon ;

01-98-D-110 REPORT MO.

AF058-84-0367 CONTRACT NO.

2304 PROJECT NO.

¥ TASK NO. MONITOR:

AF 19 1x 53-0542

## UNCLASSIFIED REPORT

stochastic cunds in the convex majorisation sense to the critical positions. This paper presents those results in a more get all framework and, using similar techniques, obtain box. For shortest route, maximal flow and Meilijson and Nadas (1979) have obtained reliability system lifetime. (Author) ABSTRACT: (1

SCRIPTORS: (1) \*OPERATIONS RESEARCH \*STOCHASTIC PROCESSES, FATHS, CRITICALITY(GENERAL), LENGTH, RELIABILITY, PERT, NETWORK FLOWS, ROUTING DESCRIPTORS:

\*Stochastic bounds, WUAFOSR2304A5, 3 IDENTIFIERS: PE61102F

20/12 9/2 AD-A170 772 PURDUE UNIV LAFAYETTE IN SCHOOL OF ELECTRICAL ENGINEERING

(U) Investigation of a New Concept in Semiconductor Microwave Oscillators.

Annual rept. 1 May 85-30 Apr 88 DESCRIPTIVE NOTE:

MAY 86

Cooper, dames A. , Jr PERSONAL AUTHORS:

AF05R-85-0193 CONTRACT NO.

2305 PROJECT NO.

ວ TASK NO.

AF0SR TR-86-0527 MONITOR:

### UNCLASSIFIED REPORT

IPPLEMENTARY NOTE: Original contains color plates: All DIIC and NTIS reproductions will be in black and white. SUPPLEMENTARY NOTE:

processing required special attention: implant activation, resistive gate formation, and silicon nitride deposition. Uncapped flash annealing was used for implant activation, and satisfactory results were achieved. and characterize a new type of semiconductor device known as a contiguous-domain transferred oscillator. This device differs from existing semiconductor oscillators in several fundamental ways, and should be capable of direct electronic tuning in the range from a few gigahertz to a few bundred gigahertz. During the first year of this project, test chips were designed, masks were made, and a processing schedule was worked out. Three aspects of the The goal of this research is to fabricate ABSTRACT: (U)

\*MICROWAVE OSCILLATORS, \*SEMICONDUCTORS ELECTRODES, TUNING DEVICES, CHIPS/ELECTRONICS),
GATES(CIRCUITS), SILICON COMPOUNDS, NITRIDES, ION BEAMS,
THIN FILMS, NICKEL, MANGANESE, CHROMIUM, GALLIUM
ARSENIDES, WAFERS, TRANSPARENCIES, ETCHING, FABRICATION, DESCRIPTORS: ALLOYS

Oscillators), Resistive gates, Silicon nitrides, Buried CDTO(Contiguous Domain Transferred IDENTIFIERS: (U)

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AD-A170 778

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# DIIC REPORT BIBLIDGRAPHY SEARCH CONTROL NO. EVN34M

AD-A170 772 CONTINUED

charmete flash annealing, Implant activation, Electricis(Gate), braw electrodes, WUAFOSR2305C1, PLB11C:r Source Electrodes

AD-A170 771 20/3 20/

PANAMETRICS INC WALTHAM MASS

(U) Absorption and Scattering by Conductive Fibers: Basic Theory and Comparison with Asymptotic Results.

DESCRIPTIVE NOTE: Annual rept. May 84-Smp 85.

OCT 85 68F

PERSONAL AUTHORS: Pedersen, N. E.; Pedersen, J. C.; Waterman, P. C.;

CONTRACT NO. ' F49620-84-C-0048

PROJECT NO. 2308

TASK NO. C4

MONITOR: AFOSR TR-88-0518

## UNCLASSIFIED REPORT

ABSTRACT: (U) A theory based on the variational method, along with associated computer codes, has been developed for analyzing the electromagnetic scattering and absociption from thin conductive fibers of arbitrary size, conductivity and orientation. Extensions and refinements of this theory have now been completed and programmed. A summer, is given of the basic equations used in the variational computation for arbitrary ribers. The quasistatic model appropriate at Irng wavelengths is then which should be accurate for wave angths short compared with cylinder length. In order that the computations may be extended into the infrared and visible regimes, it is necessary to incorporate the optical properties of the fibers. Curved fibers are considered in this report. An exact integral equation is derived for the general case, and some approximate results are then given for special fibers. Also discussed are the optimization studies are efficiency standpoint. Particle optimization studies are performed under varying requirements on absorption, reflection and transparency of the particle cloud.

DESCRIPTORS: (U) \*ELECTROMAGNETIC SCATTERING, \*FIBERS. \*08SCURATION, THINNESS, ELECTRIC CONDUCTORS, RADIATION

AD-A170 771

# DTIC REPORT BIBLIDGRAPHY SEARCH CONTROL NO. EVN34M

AD-A170 771 CONTINUED

ABSOR) '4, W.CROWAVES, INFRARED SPECTRA, OPTICAL PROPE. S. INTEGRAL EQUATIONS, TRANSPARENCE, VARIATIONAL METH. CAMPL.ERIZED SIMULATION, METAL FIBERS, LEAD(N. +L), COPPER.

IDENTIFIE S. (U) Drude model, MUAFOSR2308C4, PE61102F

AD-A170 765 12/1 12

ILLINDIS UNIV AT CHICAGO CIRCLE DEPT OF MATHEMATICS STATISTICS AND COMPUTER SCIENCE

(U) Optimal Step Type Designs for Comparing Test Treatments with a Control.

DESCRIPTIVE NOTE: Interim rept.

JUN 86 18

PERSONAL AUTHORS: Cheng.C. S. ;Majumdar,D. ;Stufken,J. Ture,T. E. ;

REPORT NO. TR-88-03

CONTRACT NO. AFDSR-85-0320, AFDSR-80-0170

PROJECT NO. 2304

TASK NO. AS

MONITOR: AFOSR TR-86-0577

## UNCLASSIFIED REPORT

ABSTRACT: (U) The problem of obtaining A optimal designs for comparing v test treatments with a control in b blocks of size k each is considered. A step type design is a BITB design in which the control is replicated times in some blocks and t + i times in the remaining blocks A condition on the parameters (v,b,k) is identi, ed for which optimal step type designs can be obtained. Families of such designs are given. Methods for searching for highly efficient designs are proposed, for stautions where it is difficult to determine an A optimal design.

DESCRIPTORS: (U) \*CONTROL THEORY, \*SYSTEMS ENGINEERING, EXPERIMENTAL DESIGN, OPTIMIZATION, MATRICES(MATHEMATICS)

INENTIFIERS: (U) \*8lock design, Homoscedasticity, BTIB(Balanced Ireatment Incomplete Block), WUAFUSR2304A5, PE81102F

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# SEARCH CONTROL NO. EVN34M DITC REPURT BIBLIOGRAPHY

AD-A170 764	6/13	AD-A170 783	1/3	11/10	11/8
NORTH COLLIN	MORTH C. IL INA UNIV AT CHUPEL HILL CENTER FOR STOCHASTIC	MISCONSIN UNIV-MADISON DEPT OF CHEMISTRY	-MADISON	DEPT OF CH	EMISTRY
PROCESS		(U) The Polysilane High Polymers.	Pure High	Polymers,	
Englissing	(U) Rece. (Mayelopments in Probabilistic Geotechnical Engl. of Ing.	86 21P	216		
DESCRIPTIVE NOT	DESCRIPTIVE NOTE: Rept. for Nov 83 Aug 84.	PERSONAL AUTHORS: West, Robert	i: West.	Robert ;	

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Hasofer, A. PERSONAL ALTHURS:

REPORT NO

F48620-85-C-0144 CONTRACT NO

2304 PROJECT NO

**V**2 TASK NO

18 88 0800 AF OSR MONITON:

## UNCLASSIFIED REPORT

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the s	International Symposium on Recent Devalopments in	and Field Tests and Analysis of Geotechnica	
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λà	•	•	ŝ
Ž.	2	Labora	Problem: 5p 1983.
UPPLEMENT RY NOTE: Pub in Proceedings of the	Int.		5

xic geotechnical engineering are presented in a on-technical fashion. The areas covered are the ics, graphical analysis, choice of estimators, slysis and updating parameter distributions; esses, including micro-macro models and a slope failure, Probabilistic design with arence to Level II design vetnods and slope New And extended work in some areas of Measuring soil properties, including (Author) . Closts i i dedorq Pector , . 1 . 1 . 5 . 6 follow. Groores Epecial AJSTRACT Merkov

(U) +SOIL MECHANICS, +MATHEMATICAL MODELS, PROBABILITY, SLOPE, STABILITY, REPRINTS SYMPOS1 a DESCRIPT

(U) •Geotechnical engineering. 4AS, PEB1102F 10EMTIF1F MUAFOSE

## F49820-83-C-0044

2303

CONTRACT NO. PROJECT NO

## UNCLASSIFIED REPORT

TR-86-0585

AFOSR

MONITOR: TASK NO.

82

PPLENE,TARY NOTE: Pub. in Jnl. of Organometallic Chemistry, v300 p327-348 1988. SUPPLEMENTARY NOTE:

organopolysilane high polymers, including history, synthesis, electronic properties, photochemistry, chemical and crosslinking reactions. The technological applications of polysilanes as precursors to silicon carbide, as photoresists for microelectronics and as photoinitiators for vinyl polymerization are also covered. A review of the published literature of ABSTRACT: (U)

POLYMERS, PHOTOCHEMICAL REACTIONS, SYNTHESTS(CHEMISTRY), CROSSLIKKING(CHEMISTRY), RADIATION ABSORPTION, ULTRAVIULET RADIATION, SILICON CARBIDES, VINYL PLASTICS. REPRINTS (U) . POLYSILANES, ORGANIC CHEMISTRY DESCRIPTORS:

DENTIFIERS. (U) Organopoly silanes, Polysilane/alkenyl, WUAFOSR230382, PE61102F IDENTIFIERS.

AD-A170 764

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EVN34M 43 PAGE

# SEARCH CONTROL NO. EVN34M DIEC REPORT MIBLIOGRAPHY

	VALE UNIV NEW HAVEN CT DEPT OF OPHTHALMOLOGY AND VISUAL SCIENCE
5/10	NEW HAVEN CT
AD-A170 759 5/10	YALE UNIV SCIENCE
	NORTH CAROL: A UNIV AT CHAPEL HILL CENTER FOR STOCHASTIC PROCESSES
13/1	HILL CENTEL
3/3	AT CHAPEL
•/•	A UNIV
AD-A170 781	MONTH CAROL PROCESSES

(U) A Model for the Processing of Position Information in the Human Visual System. Technical rept. DESCRIPTIVE NOTE: A Stocha He Process That is Autoregressive in Two : E: Technical rept. Nov 83 Aug 84 Directle . of Time. DESCRIPTIVE + 3

Hirsch, Joy : Hylton, Ron ; 78-8304 PERSONAL AUTHORS: REPORT NO. SEP 13 DEHABIN, L. 1 × 6 PERSONAL AUTO SE

CONTRACT NO. PROJECT NO. MONITOR: TASK NO. f 48620-82-C-0008 **8** 

F49620-83-C-0028

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## UNCLASSIFIED REPORT

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MONITOR: TASK NO.

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CONTRACT NO.

REPORT NO.

PROJECT NO.

Pub. in Statistica Neerlandica, v40 SUPPLEMENTARY NOTE: n1 p39-45 ABSTRACT: (1)

SUPPLEMENTARY NOTE: Prepared in cooperation Jith Columbia Univ. Dept. of Physics., New York, NY.

UNCLASSIFIED REPORT

AF 05R TR-86-0540

ISTRACT: (U) We present a model for the processing of positional information in the human visual system, with particular emphasis on visual tasks that involve the

ABSTRACT:

A continuous time stationary process is it is maxauturegressive in one direction of Autoregressive in the order direction. A version of the process was discussed in i). A related continuous time process is wates (1980). : pessnosip at scussed time and so Chemick .

(U) \*STOCHASTIC PROCESSES, \*MATHEMATICAL \* FLOW, \*SOLAR ENERGY, RIVERS, ENERGY A STATISTICS, REPRINTS MODELS, SW. STORAGE, C. DESCRIPTORS:

\*Autoregressive processes WUAF0SR2304 5, PEB1102F 7 DENTIFIERS

SCRIPTORS: (U) \*VISION, \*INFORMATION PROCESSING, POSITION(LOCATION), SPACE(ROOM), MODELS DESCRIPTORS:

information. We refer to the model as the scaled lattice

Major conserns which we do not address are questions of temporal dependence and the integration of binocular

lattics, considered as a two-disensional spatial sampling system. Mechanisms of neural interpolation are discussed and hyperaculty is a natural consequence of the model.

measurement of spatial separation. The model is in many respects a radical departure from current thinking about problems in vision. Of particular note is the fundamental significance we attach to the retinal photoreceptor.

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Scaled lattice model, PEB1102F 9 MUAF 05R2313A5 IDENTIFIERS:

A5-A170 758

JNC: VS31F1EL

7 PAGE

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## SEARCH CONTROL NO EVN34M DIIC REPURT BIBLIDGRAPHY

TEXAS UNIV HEALTH SCIENCE CENTER AT DALLAS DEPT OF CELL 6/10 5/10 BIOLOGY AND ANATOMY AD-A170 755 NEW HAVEN CT DEPT OF OPHTHALMULOGY AND VISUAL 2 5/10 YALE UN! 4 3C 0714-0A SCIENCE

(U) The Role of Central Monoaminergic Systems in Arousal and Selective Attention. (U) Limits of Pattern Discrimination in Human Vision

DESCRIPTIVE NOTE: Annual rept. 1 Mar 85-28 Feb 88 DESCRIPTIVE NOTE: Final rept. Jan 83-Dec 85,

PERSONAL A. CHORS: Hirsch, Joy FEB 80

PERSONAL AUTHORS: Waterhouse, Berry D. ;

MAR BB

AF0SR-85-0135

CONTRACT NO.

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PROJECT NO.

F49820-83-C-0028 CONTRACT NO

2313 PROJECT NO

AFOSR MONITOR:

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TASK NO.

14-88-0569

## UNCLASSIFIED REPORT

the photoreceptor lattice, and the consequences the vision. Highlights from this study are inted. I) Fovel Spatial Discriminations are trasks; 2) The spatial-frequency things of the spatial-frequency. 4) Scaling mechanisms apply to low resolution the photoreceptor lattice is a highly ordered entition segments can be related to retinal stray; 8) A hexagonal component exists in scrimination; 7) A new 'metric' model of identification of various limits of human spatial This investigation was focused on continues lausing on visual sampling 5 for spat Paxago: tasks: . hyperaci discrim spetie! The dis Briefly ABSTRACT: į JI COMY

.VISUAL PERCEPTION, .DISCRIMINATION (U) \*VISUAL PERCEPTION, \*DISCREMENTED PRETINA, PHOTORECEPTORS, TWO DIMENSIONAL. FOVEA, LOW RESOLUTION SAMPLING DESCRIPTO PATTER! .

Spatial vision, Hyperacuity, Webers law, PE1102F, WUAFOSR2313A5

## UNCLASSIFIED REPORT

TR-88-0414

AFOSR

MONITOR: TASK NO.

3

HT on rat visula and somatosensory cortical neuron responses to afferent pathway stimulation, 2) topographic organization of the neocortical projection neurons in the norepinephrine (NE) and serotonin (5-HT), serve to modulate central neuronal responsiveness to afferent synaptic inputs and by so doing participate in the cognitive process of selective attention. Specifically, individual studies describe: 1) the effects of NE and 6ongoing set of studies simed at characterizing the physiological actions and anatomical organization of the monoaminargic projection systems to the rat cerebral cortex, careballum and hypothalmus. The underlying thome of this work is that the endogenous monoamines, monoamine systems of the mammalian brain may enhance the performance of target neuronal circuits as a function of characterization of NE effects in rat lateral hypothalamus and 4) similarity between the modulatory actions of NE and stimulant drugs, cocaine and amphetamine. Overall, the data provide further support for the contention that the diffusely distributed The work described here is part of an changing behavioral conditions. ABSTRACT: (U)

\*CENTRAL NERVOUS SYSTEM, \*AWARENESS, DESCRIPTORS: (U)

AD-A170 755

AD-A170 758

SEARCH CONTROL NC. EVN34M D' LC REPURI BIBLIDGRAPHY

> CONTINUED AD-A170 711

\*AMINES, \*NEUROCHEMICAL TRANSMISSION, CEREBRAL \*ZBELLUM, HYPOTHALAMUS, SEROTONIN, SYNAPSE, VISUAL CORTEX, NERVE CELLS, RESPONSE(BIOLOGY), \*(PHYSIOLOGY), PHARMACOLOGY, RATS ATTENT! CORTEX.

STIMULA COGNIT

\*Monoamines, Norephinephrine, PEB1102F MUAFOS... 12A3 I DENTIF!

11/9 AD-A170 751 PERNSYLVANIA STATE UNIV UNIVERSITY PARK DEPT OF GEOLOGY AND GEOPHYSICS

Reletionship between Neer-Fleid and Teleseismic Observations of Seismic Source Parameters.

DESCRIPTIVE NOTE: Final rept. 1 feb 83-31 May 85,

286P MAY 85 PERSONAL AUTHORS: Alexander, Shelton S.

AF05R-82-0054, ARPA Order-4397 CONTRACT NO.

PROJECT NO.

7 TASK NO.

TR-88-0554 AFOSR MONITOR:

## UMCLASSIFIED REPORT

SSTRACT: (U) Contents: (1) Estimates of Source and Path Characteristics in the USSR and North America Using Short Period (Lg) and Long-Period Surface Mave Dispersion and Spectral Excitation; (2) Analysis of the New Brunswick, 1882, Earthquake Sequence with Inferences on Source Parameters from Multi-Mode Surface Mave Dispersion and Spectral Excitation (M.S. Thesis of C. Nichols).

ESCRIPTORS: (U) \*SEISMIC WAVES, \*EARTHQUAKES, USSR, MORTH AMERICI, SOURCES, PATHS, SURFACE WAVES, SCATTERING, EXCITATION, SPECTRA, NEW BRUNSWICK, MULTIMODE, WAVE PROPAGATICH, THESES DESCRIPTORS: (U)

Salsmic sources, PEB1102F IDEMTIFIERS: (U) WUAFOSR2309A2

SEARCH CONTROL NO. EVN34M DIIC REPORT BIBLIDGRAPHY

7/3 11/2 COUNTRY STASS MORKS NY AD-A170 7:0

(U) Flux ton Glasses for fulk Optical and Maveguide Apt. Lettons.

DESCRIPTIVE NOTE: Final rept. 15 Aug 64-14 Aug 65, 2 = JAN BÖ

PERSONAL AUTHORS: TICK, P. A. ;

F49620-84-C-0088 CONTRACT :

2303 PROVECT &

? TASK NO

18-86-0570 AF OSA HONITOR.

## UNCLASSIFIED REPORT

a vide transmission window heavy metal fluorida (2) which could eventually be compatible with vapor deposition (CVD) forming. During the first of contract work, a new composition field i e. 2. Liff Liff Dhiz J glasses, were identified and chemistry and properties of the system of the intent bf the work is to use such for bulk IR optics or for ultra low-loss OWG further characterization was required. It to establish the utility of these glasses as infrared transmitting materials. This required The overall goal of the research was to effects of infrared absorbing impurities be determined. that a mained for removing water be found and that the these two areas constituted much of the recent glasse. the b. .. 20 g ter prect el for t GYe! į 9

S (U) +OPTICAL GLASS, +INFRARED EQUIPMENT, S. CADMIUM COMPOUNDS, LITHIUM CUMPUNNDS, COMPOUNDS, SALTS, WATER M SCRIPT ALUMI Ž

HMFG(Heavy Metal Fluoride Glass), colum Lithium Aluminum Lead), Heavy metals, Zircocures, PEB1102F (DENTIF: -5 (U)

AD-A170 750

6/3 AD-A170 739

MISSOURI UNIV-ST LOUIS DEPT OF PHYSICS

(U) Quantum 1/f Noise in Submicron Devices and Quartz Resonators.

DESCRIPTIVE NOTE: Final technical rept. 15 Jul 84-14 Jul

28P 0CT 18

Mandel, Peter H. : PERSONAL AUTHORS:

AF05R -84-0228 CONTRACT NO.

2305 PROJECT NO.

ວ TASK NO. AF0SR TR-88-0550 MONT TOR:

### UNCLASSIFIED REPORT

allowed for the first time a unitified description of 1/f noise in the mobility, the surface and bulk recombination speed, the injection, emission, trapping and turneling processes in submission devices and quartz resonators and surface accoustic wave devices. All noise sources sentioned above have been expressed in terms of a fundamental formula which in essence equates the spectral density of fractional cross section fluctuations (e.g. scattering cross sections which determine the frequency of collisions, the relaxation time and the mobility) with various submicron devices such as HEMT, HuT, n(+)p diodes, photodetactors have given a good fit to experimental data speed of light, for the process considered, multiplied by the fine structure constant 1/137. The applications to The work performed under this grant has the quadratic carrier velocity change in units of the Without free parameters. ABSTRACT:

SCRIPTORS: (U) \*QUANTUM ELECTROMICS, \*NOISE(ELECTRICAL AND ELECTROMAGNETIC), QUARTZ RESONATORS, SURFACE ACQUSTIC WAVE DEVICES, CARRIER MOBILITY, TRAPPING(CHARGED PARTICLES), TUMMELING(ELECTRONICS), SCATTERING CROSS. SECTIONS, FIELD EFFECT TRANSISTOPS DESCRIPTORS:

Hooge parameters, WUAFOSR2305C1 3 IDENTIFIERS:

AD-A170 739

EVN34M 47 PAGE

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DIIC REPORT BIBLIOGRAPHY

PEB 1102F

CONTINUED

AD-A170 739

AD-A173 688

SEARCH CONTROL NO. EVN34#

MARYLAND UNIV COLLEGE PARK DEPT OF COMPUTER SCIENCE

(U) Parallel Matrix Computations.

DESCRIPTIVE NOTE: Interim rept. Apr 85-Apr 86

129 MAY BB

PERSONAL AUTHORS: Stevant, Q. W. ; 0'Leary, Dianne P. ;

AF05R-82-0078 CONTRACT NO.

2304 PROJECT NO.

43 TASK NO.

AF0SR TR-86-0548 MONITOR:

## UNCLASSIFIED REPORT

analysis of algorithms to be run in a processor-rich any formment. The authors focus primarily on algorithms that requires no global control and that can be run on systems with only local connections among processors. They investigate the properties of these algorithms both theoretically and experimentally. The experimental work is done on the ZMOB, a working parallel computer operated by the Laboratory for Parallel Computerion of the Computer Science Department at the University of Maryland To give this work direction, they focused on two areas: Dense problems from numerical linear algebra; and The iterative and direct solution of sparse linear systems. This project concerns the design and

DESCRIPTORS: (U) "ALGORITHMS, COMPUTATIONS, PARALLEL PROCESSING, LINEAR ALGEBRA, LINEAR SYSTEMS, SPARSE MATRIX, BIBLIOGRAPHIES, REPORTS, ABSTRACTS

WUAF0SR2304A3, PEB1102F IDENTIFIERS: (U)

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## SEARCH CONTROL NO. EVN34M DIIC REPORT BIBLIOGRAPHY

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	<b>₹</b> \$
AD-A170 6	ENGINE:

Similar studies have been initiated in which a mechanical alloying step is introduced prior to powder consolidation.

CONTINUED

AD-A170 698

SCRIPTORS: (U) \*ALUMINEM ALLOYS, \*HIGH TEMPERATURE, CREEP, TENSILE PROPERTIES, VIELD STRENGTH, POWDER METALLURGY, MICROSTRUCTURE

DESCRIPTORS:

(Author)

WUAFUSR2306A1, | F61102F

IDENTIFIERS: (U)

sental Study of P/M Processed Elevated stone Aluminum Alloys. 

DESCRIPTI < NOTE: Annual technical rept. 1 Oct 83-30 Sep

276 500 PZRSONAL A. (HORS: Lawley, A. ; Kodzak, M. J.

AF05A-82-0010 CONTRACT

2308 PROJECT NO

4 TASK NO.

18-88-0586 AF CSR HOMITOR:

## UNCLASSIFIED REPORT

order to provide design guidelines with respect in service stresses and temperature Tests have setting the service stresses and temperature of the service strength decreases with a temperature and above 300 C. It is independently if a size and dispersoid volume fraction. Steady or rate is independent of the dispersoid volume. er the temperature range 250 C - 400 C, and as stress exponent is 10 with a creep activation 78 Kcal/mole. Elevated temperature deformation ant with a cooperative dislocation climb g examined with respect to processing mode, vure and microstructural stability. The overall (U) Elevated temperature tensile and creep s of powder metallurgy Al-Fe-Ni alloys with spersoid volume fractions of 0.19, 0.28 and 0. a microstructure relations in this new class of benefits of a dual powder metallurgy/rapid
 tion approach with respect to enhanced
 tural stability at elevated temperatures. which is insensitive to dispersoid size and 1 volume fraction. The data and observations . is to establish a basic understanding of PHIAIS - icroi proces. alloys to lis · Jeds ID dislo - TOUGH of d15. micros. 32 pre ab Ject **IDSTRACT** 5 rect: 2 1111 che/ erergy ٥ •

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## SEARCH CONTROL NO. EVN34M DTIC REPORT BIBLIOGRAPHY

AD-A170 667	11/6	AD-A170 697 CONTINUED
DREXEL (W) ENGINEERI:	DREXEL IN: PHILADELPHIA PA DEPT OF MATERIALS ENGINEERI:	300 C. At higher temperatures, dislocation climb is the controlling mechanism and the small oxides/carbides are
(U) A Fund Tempera	(U) A Fund. 'al Study of P/M Processed Elevated Tempera -a Aluminum Allays.	no longer effective barriers to climb. Processing mode does not significantly alter the as-extruded microstructure, but it does influence strength and
DESCRIPTIVE A.	DESCRIPTIVE ALTE: Annual technical rept. 1 Oct 84-30 Sep.	strangth retention. A combination of low degassing and extrusion temperatures results in superiority with

DESCRIPTORS: (U) \*ALUMINUM ALLOYS, \*XIGH TEMPERATURE, IRON ALLOYS, NICKEL ALLOYS, MICROSTRUCTURE, HARUNESS, POWDER METALLURGY, MECHANICAL PROPERTIES respect to strength and stability.

WUAFOSR2308A1, PEBI102F IDENTIFIERS: (U)

AF0SR-#2-0010 CONTRACT NO.

PERSONAL AUTHERS: Lawiny, A. ; Koczak, M. J.

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2308 PROJECT NO.

Ar . 8 1r . 3-0567 MONITOR: TASK NO.

## UNCLASSIFIED REPORT

itils fine-scale dispersoid provides effective in addition, MA enhances microstructural elevated temperature; for example there is coarsening of the fewlAl9 after 824 hours ovements in alloy strength and stability is to the presence of fine scale (similar to inibuted uniformly throughout the matrix, at to dislocation bowing (Orowan mechanism) below sassing mode, microatructure, and at stability. The overall objective ta to said understanding of processing-prelations in this new class of alloys in lish design quidalines for limiting temperatures. In the current program year, fied prealloyed powder containing 0.19 of FeMiAl9 dispersoid (similar to 0.18 of extruded to full density. The MA alloy Can the non MA alloy at temperatures up to and carbides introduced during MA, and The ambient and elevated temperature : a-Ni alloys are being evaluated with stallic suterfaces, and on sungrain elcrostructural stability of pouder processed respect to STRACT: (1) establish . al crostruc. no signifi at 450 C. rapidly so is stronge about 300 microstruc. order to e Stresses > volum fr are attrity resistance microsster **Subsequent** stability. 30 rg ox metrix- ir **boundaries** which are ABSTRACT:

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AD-A170 687

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## SEARCH CONTROL NO. EVN34M DITC REPORT BIBLIOGRAPHY

AD-A170 691 ARIZOT STATE UNIV TEMPE CENTER FOR SOLIO STATE S RESEARCH AD-A170 . .

etical Studies of Experiments and Applications of esecond Photoconductivity. DESCRIPTION NUTE: Armual technical rept. no. 1, 1 Sep 84-(E)

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Grondin, Robert 0. PERSONAL 3 1110RS:

AF05R-84-0280 CONTRACT &

2305 5 PROJECT ... TASK NO

18-88-0562 AF0SR MONITOR

## UNCLASSIFIED REPORT

semico scators. In these experiments subplicosecond laser pulses are focused onto a gap in a transmission line with a semi-conditing substrate. A voltage wave is then propa. Adown the line as a result to 8 the photos scative translent in the gap. During this first year we developed models for the description of the of addition of semicascond photoconductive is as used as profes of hot carrier transport in cotogeneration process and the ensuing continuant transfent. Monte Carlo methods were used in During the reporting period, the first s two year program, progress was made on the both an stassa models. 9 YBBF C. CBLLIA photo -dx

UCTIVITY . ELECTRONIC SWITCHING TRANSPORT . TRANSFERTS, QUICK REACTION, ELECTRON GAS. . TRON DEFICIENCIES), LIGHT PULSES, GALLIUM \*SEMICONDUCTOR DEVICES MONTE CARLO METHOD DESCRIP. ARSEN. PROPE HOLES 

Femtosecond time, Microstrip Secon lines, WUAFDSR2305C1, PEB1102F 3 DENTIF

12/1

FLORIDA STATE L'MIY TALLAMASSEE DEPT OF STATISTICS

(U) Heasures of Dependance for Evaluating Information in Cansored Models

DESCRIPTIVE NOTE: Technical impt.

JUL 85

Hollander, Myles ; Proschan, Frank PERSONAL AUTHORS: Sconfing, James ;

FSU-STATISTICS-M706, TR-85-180-AFOSR REPORT NO.

F49820-85-C-0007 CONTRACT NO.

PROJECT NO.

TASK NO.

AF0SR TR-88-0547 MONITOR:

## UNCLASSIFIED REPORT

increases. An exception occurs when dependence is defined in terms of association. Conditions under which the coefficients of divergence enjoy the fundamental property Measures of information in censored model: are developed by adapting measures of dependence between the lifetime variable and the observed variable. Some common notions of bivariate dependence and coefficients bivariate dependence have the fundamental property that as censoring decreases stochastically, the information measurus. It is shown that most of the measures of of divergence are used to derive these classes of are established. (Author) ABSTRACT:

SCRIPTORS: (U) \*BIVARIATE ANALYSIS, \*MATHEMATICAL MODELS, PROBAZILITY DISTRIBUTION FUNCTIONS, PROBABILITY DENSITY FUNCTIONS, RANDOM VARIABLES, CUEFFICIENTS. DESCRIPTORS: CENSORSHIP

WUAF0SR2304A5, PEB1102F IDENTIFIERS: (U)

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## SEARCH CONTROL NO. EVN34M DIIC REPORT BIBLIOGRAPHY

20/3

STANFORD UNIV CA EDWARD L GINZTON LAB OF PHYSICS 13/8 AD-A170 653 TEXAS UNIV ALISTIN DEPT OF ELECTRICAL AND COMPUTER ENGINEERING 12/1 AD-A170 887

(U) Research in Adaptive and Decentralized Stochastic Cantrol

Interim rept. 18 Mar 84-14 Mar 85, DESCRIPTIVE P. .. E.

Marcus, Steven 1. ... PERSONAL AUTO MAY 85

AF USR-84-0089 CONTRACT NO.

400 PROJECT NO.

TASK NO.

TR 08:0549 **Y:** MONITOR:

## UNCLASSIFIED REPORT

and identification of queueing systems was also of adaptively controlling a discountedstachastic systems. The problem of adaptive comity assignment in queueing systems was tance-measures approach to the problem of Significant progress was made in a number Layer studied in depth a problem of trol with incomplete observations, in which is a finite state Markov process. (Author) state Markov decision process was solved. trol with incomplete observations. In ABSTRACT: (U) approximat: of aspects control of adaptive c studied. A Perand 110 adaptive . particular Bolved. A the state Major Per

DESCRIPTORS

QUEUERING SYSTEMS, PEBLIO2F 5 IDENTIFIERS

## (U) Lasar Physics and Laser Spectroscopy

DESCRIPTIVE NOTE: Final rapt. 15 Feb 84-14 Feb 85,

MAR 86

PERSUNAL AUTHORS: Byer, Robert L.

F48620-84-C-C021 2301 CONTRACT NO. PROJECT NO.

Ŧ, TASK NO.

TR-88-0588 AFOSR HONITOR:

## UNCLASSIFIED REPORT

single crystal fiber growth machine has broduced over 400 fibers of a variety of materials, some of which had never before been grown in fiber form. A high speed, high resolution, long working distance dismeter measurement system has been constructed and installed on the growth machine. It has enabled the closed loop growth of single crystal fibers possessing diameter stability a factor of four better than the fibers grown without feedback diameter control. The first monolithic single crystal fiber devices, a fiber ruby laxer and a sopphire fiber In its second year of operation, the thermometer, have been studied. ĵ ABSTRACT:

ESCRIPTORS: (U) •CRYSTAL GROWTH, •FIBER OPTICS TRANSMISSION LINES, SINGLE CRYSTALS, DRAWING/FORMING), SAPPHIRE, RUBY, YITRIUM ALUMINUM GARNET, LITHIUM NIOBATES, FABRICATION, FIBER OPTICS, HEATING, LASER BEAMS DESCRIPTORS:

IDENTIFIERS: (U) PEB1102F, WUAFOSR3301A1

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DIIC REPORT BIBLIOGRAPHY

AD-A170 62

MISCONSIN MIN-MADISON DEPT OF CHEMISTRY

(U) A Bent Cyclopolystlane Anton-Radical (1-Pr251)4,

8

PRIORAL A TRORS: Wadsworth, Cynthia L. ; West, Robert ; Negat, Youthiro ; Matanaba, Hamao ; Matsumoto, Hidayuki ; PERSONAL A "HURS;

F48620-83-C-0044 CONTRACT NO

PROJECT NO

TASK NO.

AFOSR MONITOR:

0650-98 X

## UNCLASSIFIED REPORT

Pub. in Chamistry Letters, p1525-1528 SUPPLEMENTARY NOTE:

Bu251) 4 tau) shou two equally-intense splitting constants for all a (13)C, indicating that these anion-radicals are bent arm of rapidly interconverting Cyclopolysilanes undergo radiction to anion-radicals in which the unpaired electron is delocalized over the ring. Numerous anion-radicals of four. If two, and strampbered ring cyclopolysilanes have been investigated by ESR spectromopy in recent years. When these rings are of the form (E.S. in(tau) (with all substituents R identical), in general rick show only single values for the alpha-(13)C hyperf. a splitting constant (hfsc), as well as for the to 6, are either planer or rapidly verting on the ESR time scale. An exception to railization has now been observed, for octakis-(i-The ESR spectra for (1-Pr2Si)4(tau) and (salphanis of his when it is large enough to be observed. These for sings imply that such anion-radicals (R2S1)n(tau) , clotetrasilane, 1. 3 . . . . . . ABSTRACT Interc this o Propy

ELECTRON SPIN RESONANCE, \*ANIONS, \*CHEMICAL CECTRON SPIN RESONANCE, ELECTRON SPECTROSCOPY, \*\*POUNOS, BENDING, SPLITTING, HYPERFINE STRUCTURE. DESCRIPT. S RADICAL REPRING CYCLIC

3 DENTIFIE ...

AD-A170 632

SEARCH CONTROL NO. EVN34M

14/4 12/1 AD-A170 455

ARIZONA UNIV TUCSON

(U) A Bayesian Approach to Quantile and Response Probability Estimation with Applications in Reliability.

DESCRIPTIVE NOTE: Technical rept.,

245 AUG B5

PERSONAL AUTHORS: Shaked, Moshe ; Singpurvalla, Nozer D.

AF0SR-84-0205 CONTRACT NO.

2304 PROJECT NO.

A 5 TASK NO. AF0SR TR-88-0352 MONITOR:

## UNCLASSIFIED REPORT

Prepared in cooperation with George Washington Univ., Washington, DC. SUPPLEMENTARY NOTE:

This paper studies a Bayesian approach for the estimation of potency curve which is assumed to be nondecreasing and cocave. This is done by assigning a birchlat prior to transformations of some unknown parameters. The choice is made of the prior and investigate several aspects of the problem, such as the properties of the posterior distribution as well as numerical implementation of the suggested procedure. A procedure for estimating the quantiles is also given. Applications in reliability theory are described. The procedure is illustrated numerically via an example from a government laboratory.

SCRIPTORS: (U) +BAVES THEOREM, +LIFE TESTS, +WATHEMATICAL PREDICTION, RELIABILITY, POTENCY, ACCELERATED TESTING, DAMAGE ASSESSMENT, ESTIMATES, BIGASSAY, DOSIMETRY DESCRIPTORS:

Dirichlet Process, Quantile estimation, PEB1102F, WUAFOSR2304A5 IDENTIFIERS:

AD-A170 455

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## SEARCH CONTROL NO. EVN34M DIIC REPORT BIBLIOGRAPHY

ESCRIPTORS: (U) \*SOLAR PHYSICS, \*INTERFERGMETRY, SPECULAR REFLECTION, OPTICAL IMAGES, ASTROMOMICAL CAMERAS, PHOTONS, HIGH RESOLUTION, STAMS, GROWTH(GENERAL), QUANTUM EFFICIENCY, OPTICAL OETECTORS, IMAGE INTENSIFIERS(ELECTRONICS) Observatory in this area. CONTINUED DESCRIPTORS: AD-A170 430 ation Astrophysical Observations Using SMITHSONIA. ASTROPHYSICAL OBSERVATORY CAMBRIDGE MA . Bujens Speck I. (U) HISP R AD-A170 430

Noyes, Robert W. ; Nisenson, Peter ; 98 ... PERSOLAL AU APR 16

E: Final rept. 1 Jan 81-31 Dec 85,

DESCRIPTIVE

IENTIFIERS: (U) Speckle interferometry, PAPA detectors, PAPA(Precision Analog Photon Address), PEB1102F,

IDENTIFIERS: (U) WUAF05R2311A1

> Ustas ; Stachnik, Robert V. ; Papel 1011.

AF05R-81-0055 CONTRACT NO

2311

PROJECT NO.

**-**TASK NO.

A 8-0427 MONITOR:

UNCLASSIFIED REPORT

contract to develop a complete astronomical speckle jmage reconstruction of facility and to apply that facility to the solution of actionomical problems. During the course of the contraction to the have developed the procedures, algorithms though solving theory solving the contraction and have made. Interpreted astronomical observations of sign, the PAPA detector. Development of this sign, the PAPA detector. Development of this in our view, essential to making the speckle a useful astronomical tool, since the ediment to that circumstance in the past was have also continued research on recovery of calibrate. The photon camera made this researy and permitted precision image result of this effort and the associated comment was an ective program of coservation which included investigations This report describes progress under a "liar objects, supergiant structure and significance. A pirincipal result of the for application of photon noise procedures which were difficult if not resolution images of the solar surface scientists at the Sacramento Peak of the helium abundance of the early substantly. program to device vas the necess imovativa process 1: compensa t eldissoqmi high angui procedure principal algorithm as tronom! Into your Me a Sureme recovery ABSTRACT:

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## SEARCH CONTROL NO. EVN34M DIIC REPORT BIBLIOGRAPHY

8/10 812 CITY-04

SIE UNIV HALIFAX (NOVA SCOTIA) 3

(U) V :--+1 Senzitivities and Discriminations and Their es in Aviation.

Interim rept. Oct 84-Sep 85 DESCRIPTIVE NOTE:

9

PERSON : AUTHORS: Regan, David ;

CONTRA: 1 NO. AF05R-84-0030

2313 PROJECT NO.

? TASK H

AF0SR TR-88-0464 MONITON

## UNCLASSIFIED REPORT

and compared these data with similar measurements entional objects that were brighter than their sings. These findings may be relevant to low-level for example in helicopters, where ground features a virtually indistinguishable except when moving far ability to judge the direction of motion in unc intens, and that this can explain why subjects easily unclind orientation, size and contrast in spite of the fact the firing of cortical neurons is affected by all the parameters. We measured subjects' ability to and orientation (about 0.3 deg) is achieved by comparing the cutputs of two or more neurons, each of which is sensitive to a rather broad range of sizes and orientations. We suggest that the human visual pathway contacts size-opponent and orientation-opponent A device has been developed (MIDAPT) that deponent and particular and the services of th a camouflaged object that was visible only when -as investigated by measuring the effect of

CONTINUED AD-A170 418 judgements of motion in depth, the results could be explained in terms of only two channels: one for frontal plane motion, and one for pure line-of-sight motion.

ESCRIPTORS: (U) \*VISUAL PERCEPTION, VISION, PILOTS, PERFORMANCE(HUMAN), AFRIAL TARGETS, VISUAL TARGETS, TARGET RECOGNITION, DISCRIMINATION, SENSITIVITY, MOTION CAMOUFLAGE, CANADA DESCRIPTORS:

Visual sensitivity, Target motion, WUAFOSR2313AB, PEB1102F Ξ IDENT IF IERS:

it to different directions of motion in depth for jut viewed with one eye. In contrast to binocular

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## SEARCH CONTROL NO. EVN34M DIIC REPURT BIBLIDGRAPHY

AD-A170 383	20/8	AD-A170 345 20/2 20/12
SCIENCE A	SCIENCE AN ACATIONS INTERNATIONAL CORP. LOS ALTOS CA	COLORADO STATE UNIV FORT COLLIF
(U) Studies	(U) Studies on High Current Beam Propagation at Reduced Pressure.	(U) Carbon Whisker Study.

Final rept. 1 Mar 84-28 Feb 86,

DESCRIPTIVE NOTE:

58 86

Spain, Ian ; F49820-84-K-0006

PERSONAL AUTHORS:

CONTRACT NO.

PROJECT NO.

COLLINS

Annual rept. 15 Mar 81-30 Nov 84, 12 1P DESCRIPTIVE 9 ₹ ?

«S: Parkinson, E. R. ; Keeley, D. 141C-U-78-PA PERSONAL AU REPORT NO.

F48620-81-C-0012 1301 CONTRACT NO PROJECT NO

#1 18 In 33-0494 MONITOR: TASK NO.

## UNCLASSIFIED REPORT

ABSTRACT: (U)

ABSTRACT:	Hall current effects in the redistribution
of plesses	rents and possible stability enhancement in
electron :	s were explored in a range of pressure
Tegitas.	eved e.m. algorithms and conductivity models
SATE CON	J se part of the studies Substantial
effects v	found below a low pressure threshold, where
nonlocal	nonlocal e ta, non-Ohmic conductivity, and a highly
non-Maxve	non-Maxve and distribution of plasma electron energies
	of to contribute significantly to the
as on tude	: Mall current phenomena. Several e m field
algorithm.	e developed for application to the
non linear	and splacement regime. An iterative approach
to the so	on of the modelly expanded field equations
was found	yield fast and accurate solutions.

(1) \*PLASMAS(PHYSICS), \*HALL EFFECT, ..., ELECTRICAL CONOUCTIVITY ALGORITHMS, IC FIELDS, ELECTRON DENSITY, ASYMMETRY DESCRIPTORS ELECTROM ELECTRON

Larmor frequency, PEB11027 ĵ IDENTIFIERS

AD-A170 383

preparation of filaments prepared by ion bombardment of carbon surfaces. The effects of ion energy, fon dose (time), substrate temperature, type of substrate carbon, and the presence of 6 catalyst were investigated. Models for growth were developed at both CSU and IBM.

UNCLASSIFIED REPORT

AF0SR TR-88-0880

MONITOR: TASK NO.

5

DESCRIPTORS: (U) •CARBON, •WHISKERS(CRYSTALS),
PREPARATION, FILAMENTS, 10N BOMBARDMENT, SURFACES, ENERGY,
DOSAGE, SUBSTRATES, TEMPERATURE, IRON, CATALYSTS,
GRAPHITE, 10N BEAMS, SPUTTERING, ATOMS, ADSORPTION

IDENTIFIERS: (U) PEB1102F

#### IMCLASSIFIED

## TIC REPURT BIBLIOGHAPHY SEARCH CONTROL NO EVYSAM

DIIC KEPURI BIBLICGHAPHY	HY SEARCH CONTROL NO EVYSAM
AD-A170 , 9/3	AD-A170 330 12/1
UNIVE OF SOUTHERN CALIFORNIA LOS ANGELES DEPT DE ELECTORIA ENGINEERING	NORTH CAROLINA UNIV AT CHAPEL HILL CENTER FOR STOCHASTIC PROCESSES
(U) Re: 111ty Modeling and Analysis of Communication Ne -s with Dependent Failures.	(U) Estimating Random Integrals from Noisy Observations: Sampling Designs and Their Performance.
JAN B 3 4P	DESCRIPTIVE NOTE: Technical rept. Sop 84-Aug 85,
PERSONAL A (HORS) Lam, Y. F. (L1, Victor D.)	DEC 86 58P
CONTRACT -0 F48820-88-C-0071, AF0SR-84 0269	PERSONAL AUTHORS: Bucklew, James A.; Cambanis, Stamatis;
PROJECT - 2304	REPORT NO. TR-86
TASK NO A5 .	CONTRACT NO. F48820-82-C-0009
MONITOR AFOSR FR-46-0351	PROJECT NO. 2304

## UNCLASSIFIED REPORT

Š	11008, VC0M-34 n1 p82 84 Jan 86
ABSTRAC?	(U) This paper presents a new model to study
Ž	scillty of communication networks in which link
10:10	are statistically dependent. The approach tries
to to	is and model explicitly the events that cause
COMPLE	. Hon link fillures. No conditional probabilities
2 2	and so two major difficulties inverent to
į	them, ely an exponential number of conditional
FODAL.	probat "ittes to deal with and a consistency requirement
	to sat are avoided. For reliability computations.
	some
can be	1 with minor modifications and no significant
ncres.	Increases to computational complexity

DESCRIPT . (U) \*NETWORK ANALYSIS(MANAGEMENT).
\*RELI: ITY(ELECTRONICS), STATISTICAL ANALYSIS,
COMMLA : IONS NEIWORKS, ALGORITHMS, REPRINTS

DENTIFI : (U) Communications links, WIAFUSR2304A5, PEB11C.

## UNCLASSIFIED REPORT

AF0SR TR-86-0353

TASK NO.

6

SUPPLEMENTARY NOTE: Prepared in cooperation with Wisconsin Univ., Madison. Dept. of Electrical and Computer Engineering. Supersedes AD-A152 926.

ABSTRACT: (U) The problem of estimating a weighted average of a raidom process from noisy observations at a finite number of sampling points is considered. The performance of sampling designs with optimal or suboptimal, but easily computable, estimator coefficients is studied. Several examples and special cases are studied included additive independent noise, nonlinear distortion with noise, and quantization noise. (Author)

DESCRIPTORS: (U) \*STATISTICAL SAMPLES, \*ESTIMATES, INTEGRALS, COEFFICIENTS, DISTORTION, QUANTIZATION

IDENTIFIERS: (U) Noisy observation, WUAFOSR2304AS, PEB1102F

## SEARCH CONTROL NU. EVN34M DITC REPORT BIBLIOGRAPHY

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AD-A170 326 AD-A170 3 5

LINA UNIV AT CHAPEL HILL CENTER FOR STOCHASTIC

MORTH C

PROCES.

(a) Hyp

IDENTIFIERS: (U) Hypoellipticity, Semimartingales, WUAFOSR2304A6, PE01102F lipticity of the Stochastic Partial Differential

Technical rept. Sep 65-Aug 86 DESCRIPTION NOTE:

270 MOV 85 Ustunel, A. S. PERSONAL ALTHURS:

**FR-129** REPORT NO F49620-83-C-0144 CONTRACT : :

2304 PROJECT &

¥ S TASK NO. ASO CA MONITOR:

IR - 86-0346

## UNCLASSIFIED REPORT

e.g. in quantum physics, transjort theory, sics, checletry, signal detection, etc. These are then studied in the context of the situation from which they originate. This work is a start for a systematic treatment of these. In fact, it begins with the ideal hypothesis; of the operators are elliptic and the continuous with respect to the one dimensional continuous with respect to the one dimensional In different branches of science one often istonal Misnar process. This is typically the (ered in the filtering of diffusion processes 10), except here the drift and diffusion are not respectively of the second and first / may depend on the whole history, and their s the so-called stochastic partial differential saure and on the other hand, the diffusion on by a stochastic integral with respect to a is are not necessarily commartingales. operate: s Letter; term 15 COSTILL encoun: e.pusti absolu po Jyme equati partic equett. finite C256 6 בי אם בי (ct. 2 ABSTRACT Squat! 1 SCALL

SCRIPT (U) \*OPERATORS(MATHEMATICS), \*PARTIAL DIFFEF :AL EQUATIONS, STOCHASTIC PROCESSES, INEQUALLIES, DIFFUSION, CALCULUS DESCRIPT DIFFEF

47-A17C 328

UNC. ASSIFIE

EVN34H 8 PAGE

## SEARCH CONTROL NO. EVN34N DIIC REPORT BIBLIUGHAPHY

4/2 AD-A170 3!? ILLIMOIS STATE WATER SURVEY DIV URBANA

A Th. setical Framework for Examining Geographical Varissity in the Microphysical Mechanisms of Preci . Lation Development,

DEECRIPTIVE NOTE: Final ropt. 15 Jan 82-14 Jan 88,

SCRIPTORS: (U) \*PRECIPITATION, \*ATMOSPHERIC PHYSICS, \*GEOGRAPHIC AREAS, \*CLI(4ATOLOGY, RAIN, ICE FORMATION, SNDW, WATER, DROPS, SUPERCOOLING, CLOUDS, TEMPERATURE, CONCENTRATION(COMPOSITION), AGGLOMERATES

DESCRIPTORS:

Snow flakes, PEB1102F, WUAFDSR2310A2

IDENTIFIERS: (U)

temperature and cloud droplet concentration. Other key parameters include the degree of entrainment and stability of the environment.

CONTINUED

AD-A170 317

5 5 N3

PERSONAL ACTIONS: Johnson, David B. ;

AF0SR-82-00:1 CONTRACT NO

2310

PROJECT NO

42 TASK NO. MONITOR:

TR 86-0484 AF OSR

## UNCLASSIFIED REPORT

istract: (U) The overall goal of this study was to identify and evaluate the environmental or sicrophysical parameters that control the efficiency of the various mechanis sof precipitation development. Such evaluations can then a used as the basis for studying, or even predict the effect of geographical or climatological different abstudent regions on the sicrophysical mechanis of precipitation development. This study includes sork on wars rain initiation and development, mechan!

During the first year of the study, work concentrated on the warranded studies and began on the investigation of snowflate organisation. With the extension of the study into a large study with the extension of the study into a large study into a large study additional investigations were made on snowflate aggregation and preliminary investigations were ice multiplication, snowflake aggregation, and the growth

studies - - varm rain initiation and development could be extended to include mixed-phase procipitation development. In general the study identified a number of key parameter that control the microphysical development of precipitation. The two primary parameters that need to be of were quite successful and indicated that the then. The studies of riming and graupel begun to precipit developa

measured as a climatological basis are cloud base

AD-A170 31

astend these studies into mixed phase (riming)

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## SEARCH CONTROL NO. EVN34M DITIC REPORT BIBLIDGRAPHY

CONTINUED

13-A170 3'S

WAVE PROPAGATION, DYNAMIC RANGE, REFLECTIVITY, JOINTS, DISPERSION RELATIONS AD-A170 318 HIDGE MA WEA C.

IDENTIFIERS: (U) LSS(Large Space Structures), NDE(Nondestructive Evaluation), Shear waves, Flexural waves, Longitudinal waves, Lettice structures, Periodic structures, PEB1102F, WUAFOSR2307B1 (U) Mave Propagation and Dynamics of Lattice Structures. DESCRIPTI-E NOTE: Final rept. 1 Apr 83-30 Sep 85,

27P

100

PHORS: Milliams, James H. , Ur; PERSONAL

F48620-83-C-0082 . . COMPRACT

2307 = PIDUECT . TASK NO.

AF OSR HON! TOR:

1K-88-0489

## UNCLASSIFIED REPORT

\*Capts, design and potential uses of lattice to nouter space. Such structures include large solar power systems and habitable stations for it space colonies, currently, both deployable and concepts are being investigated for the ation of lattice afructures. Also, tions of size considerations indicate that small ctive evaluation of dynamics, control, materials, ctive evaluation (NDE), enviconmental effects propogation relating to their design and Much has been written on the theoretical of such structures. Also, a large despite a distinct recognition of the importance propagation in many of the control vibration and Many papers and reports have been written iligations, virtually nothing can be found on igation in large space structures (LSS). The this program were to initiate and to pursue the cit of several aspects of wave propagation. ranging from tens of meters in span to solar itectors ranging up to several thousand meters proposed. Such structural sizes along with f vibration analyses have been undertaken. coperational requirements will require i in LSS. (Author) enely. ABSTRACT on the ۳ ۹ Struc. enter - SOAL enter i Du and ly: strip oddn PARTY. 100 16214 8 Pec Ş 7000 Coni Ponda Ì -2

\*SELF SUPPORTING STRUCTURES, VIBRATION 3 DESCRIPTOR

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# DISC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN34M

	nt in squid nervous is that synapsin I c vesicles for fMISSION, *SYIAPSE, ISSECIATION,
PERSONAL COORS: Liinas,R. ;NoGainness,T.L. ;Leonard,C. IDENTFIERS: (U) «Kinases, Calmodalin Squids, PEB:102F, S. ;S. ColiM. ;Greengard,P. ;	in Squids, PEB1102F,

## UNCLASSIFIED REPORT

AFOSB 1R-88-0418

HOMITOR TASK NO

AF05R-84-0088

CONTRACT 40

2312

PROJECT 1

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Acade	PY NOTE: Pub. in Proceedings of the National of Science, U.S.A., v62 p3035-3039 May 85.
ABSTRACT	(U) Synapsin I and calcius/calmodulin-
Capen	•
ğ	are minal digit of the squid giant synapse to test
direct	the possible regulation of meurotransmitter
=======================================	these substances. Meurotransmilter release was
de tera	
Interk	laters of the postsynaptic potential generated in
- odsa-	respond to presynaptic depolarizing steps under voltage
5	itions injection of dephosphosynapsin I
decre.	the amplitude and rate of rise of the
posts	to potential, whereas injection of either
DNo 10	upsin I or heat-treated dephosphosynapsin I was
VI IN	"ect. Conversely, injection of calcium/
C. B. C.	dependent protein kinase II, which
phose	, lates syrungin I on site II, increased the rate
0 717	
DCs ts	
3	
Initia	Initial phase of the presynaptic calcium current. A
* Kdeuks	synaps . I like protein and calcium/calmodulin-dependent
prote	proteit vinase II were demonstrated by brochemical and

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## SEARCH CONTROL NO. EVN34M DIIC REPURT BIBLIDGRAPHY

Markov chains, PEB1102F CONTINUED DENTIFIERS: AD-A170 303 AD-A170

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ing Analysis of Fault-Tolerant Computer Systems LINA UNIV AT CHAPEL HILL CHRRICULUM IN A RESEARCH AND SYSTEMS ANALYSIS (n) MORTH OPERAT

DESCRIPT: E NOTE: Technical rept.,

DEC 15

Nicola, V. F. ; Kulkarni, V. G. ; Trivedi, K. PERSONAL SETTIORS:

DAMA28-84-.:-0048, AF0SR-84-0132 CONTRACT

UNC/0RSA/TR-85-10

REPORT NO.

2304 PROJECT

TASK NO.

AF05R TR-88-0388 MONITOR:

## UNCLASSIFIED REPORT

Sponsored in part by Grant NSF-MCS83-ARY NOTE: SUPPLEN 0700

system. The failure/repair behavior of the sandeled by an irreducible continuous-time ain, Jobs afrive in a Poisson fashion to the Jare serviced according to an FCFS disciplinately cause the loss of the work already done on service, if any; in this case the interrupted cated as soon as the system is ready to deliver in addition to the delays due to failures and jobs suffer delays due to queueing. The authors a queueing analysis of fault-tolerant systems the steady-state behavior of the number of jobs stees. As a numerical example, they consider a lauthor) This paper analyzes a fault-tolerant reprira Service repair and at in the system Bys tem system A fai 8 ž **ABSTRACT** COMPL Markov preser

SCRIPT S (U) \*FAULT TOLERANT COMPUTING, \*SYSTEMS ANALYSS QUEUEING THCORY, FAILURE(ELECTRONICS), REPAIR, STEADY CLAIF, DOBS DESCRIPT S

AD-A170 3 13

AD-4170 303

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## SEARCH CONTROL NO. EVN34M DIIC REPORT BIBLIOGRAPHY

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AD-A170 282 12/1 AD-A170 2"

IMIY PA CENTER FOR MULTIVARIATE ANALYSIS PITTSBL

WUAFOSR2304AB, PI 81102F

IDENTIFIERS: (U)

ies of the Sample Covariance Matrix and al Correlation Matrix in Multivariate Time "c Distributions of functions of the 5 (U) ASYE 3

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Technical rept.,

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DESCRIPTI ..

Taniguchi, M. ; Krishnalah, P. R. ; · CRS: PERSONAL A.

TR-86-08 REPORT NO F48620-85-C-0008, N00014-85-K-0282 CONTRACT 14.

2304 PROJECT NO

TASK NO.

A SSB MONITOR:

3K 86-0357

## UNCLASSIFIED REPORT

s for time series principal component analysis.

4 the author gives the asymptotic expansions functions of canonical correlation matrix for the Gaussian stationary processes, and discusses totic properties of a test statistic for ons of eigenvalues of sample covariance of multivariate splay a fundamental role in multivariate section 2 gives the limiting distribution of sample covariance matrices for non-sear vector processes. Further Section 3, a asymptotic expansions of certain functions of covariance matrix for multivariate. This paper discusses the asymptotic canonical correlations. metrics. elgenva Gaussia multiva. e igenya proble distrib Gaussia app I ca In Sect ABSTRACT: • Augus der ives

(U) \*EIGENVALUES, \*ASYMPTOTIC SERIES, I'M FUNCTIONS, TIME SERIES ANALYSIS.
'E ANALYSIS, SIGNAL PROCESSING, APPLIED S. COVARIANCE, MATRICES(MATHEMATICS), MULTIV' MATHEM: \*DISTR DESCRIPT

AD-A170 20

STATION

AD-A170 282

UNCLASSIFIED

EVN34M

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## DTIC REPORT SIBLIDGRAPHY SEARCH CONTROL NO. EVN34M

[U] Markov Algorithms for Computing the Reliability of Staged witworks.

DESCRIPTIVE MATE: Technical rept.,

APR 88 28P

PERSONAL ALL SURS: Chang.R. C.

REPORT NO. URC/ORSA/TR-86/8

CONTRACT NO AFUSR-84-0140

PROJECT NO. 2307

TASK NO. A5

MONITOR: 27.58 3.5.88-0436

## UNCLASSIFIED REPORT

structure to algorithms, based on node partitioning, structure to algorithms, based on node partitioning, are pressing which take advantage of such structure and which us, a Markov transition-probability form of recursion. The algorithm for directed networks is related to the Minov chain formulation of Bailey and Kulkarni, but form innected networks a more detailed form of state definition is used related to one suggested by Rosentham The computational advantages of the algorithms are discussed and some numerical results presented. (Author)

DESCRIPTOF: (U) \*ALGORITHMS, \*NETWORK
ANALYSIS \*\*\*AGEMENT), NODES, RELIABILITY, COMPUTATIONS
RECURSIVE FURCTIONS

IDENTIFIER: (U) Node partition, Markov chains, WJAFOSR2 745, PEB1102F

AD-A170 274 12/1

ARIZONA UNIV TUCSON DEPT OF MATHEMATICS

(U) The Multivariate Hazard Construction.

DESCRIPTIVE NOTE: Technical rept.,

FEB 655

PERSONAL AUTHORS: Shaked, Moshe ; Shanthikumar, J. G. ;

CONTRACT NO. AFOSR-84-0208

PROJECT NO. 2304

TASK NO. AS

MONITOR: AFOSR TR-88-0350

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## UNCLASSIFIED REPORT

ABSTRACT: (U) A new representation, called the total hazard construction, of dependent random variables by means of independent exponential random variables is introduced. Conditions which imply association of nonnegative random variables are found using this construction. Furthermore, new conditions which imply stochastic ordering between two nonnegative random vectors are obtained. These strengthen previous results of the authors. Further applications in reliability theory and in simulation are indicated. (Author)

DESCRIPTORS: (U) \*RANDOM VARIAB\_ES, MULTIVARIATE ANALYSIS, TRANSFORMATIONS(MATHE4ATICS), DISTATBUTION, EXPONENTIAL FUNCTIONS, STOCHASTIC PROCESSES, RELIABILITY, SIMULATION

DEENTIFIERS: (U) Hazard construction, WUAFOSR2304A5. PEB1102F

AD-A170 275

AD-A170 274

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## SEARCH CONTROL NO. EVN34M DIIC REPORT BIBLIOGRAPHY

(U) Some Remarks on the Asymptotic Behaviour of the Lengths of a Collision Resolution Interval, Revision.

DESCRIPTIVE NOTE: Technical rept.,

DEC 85

PERS AL AUTHORS: Shaked, Moshe ; Shanthikumar, J. G. ;

CONT. ...T NO. AFOSR-84-0208

2304

PROUS T NO.

TASK NO. MONI F. P.

DESC :PIIVE NOTE: Technical rept.,

ALC: 65

Rosenkrantz, Walter A. PERSONAL AUTHORS:

CONTRACT NO. AFOSR-82-0187

2304 PROJECT NO.

₹ TASK NO.

TR-86-0347 **AFOSR** HONI TOR:

## UNCLASSIFIED REPORT

obtaining upper and lower bounds for the expected langth of a collision resolution interval for various protocols. The method is elementary in that it circumvants the intricate and ingenious complex variable methods of Fayolla, Flajolat and Hofri. The method can be applied to computing bounds for the delay. A conjecture of Massay's and some its implications, as well as some open questions of more than routine interest, are also discussed. An operator method is presented for Ξ ABSTRACT:

ESCRIPTORS: (U) \*COMMUNICATION AND RADIO SYSTEMS, \*INFORMATION THEORY, ASYMPTOTIC SERIES, ALGORITHMS, COMPLEX VARIABLES, CHANNELS, BOUNDARIES, DERATORS(MATHEMATICS) DESCRIPTORS:

ENTIFIERS: (U) Channel access algorithms, Collision resolution algorithm, PEB1102F, WJAF0SR2304AB (DENTIFIERS: (U)

UNCLASSIFIED REPORT

AF0SR TR-88-0401

NTARY NOTE: Prepared in cooperation with univ., Berkeley, School of Business

itimating complicated stochastic quantities by ation. Some theoretical and practical aspects of use ithetic and common random numbers for variance on while using the total hazard construction are (U) This paper combines recent developments in as of generation of dependent random variables with santages of the use of common and antithatic random s. This combination yields new efficient methods A proof of their optimality in estimating the value of the response sum or the response vice of functions of vector arguments with it components is presented. Some numerical is filturicate the theory. (Author) stration. - 5 2 ¥ ¥ ¥ § § 200 ABST

S: (U) \*RANDOM NUMBER GENERATORS, \*RANDOM S'S, SIMULATION, STOCHASTIC PROCESSES, MONUTONE (S, MULTIVARIATE ANALYSIS, ESTIMATES

Variance reduction, PEB1102F 

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EVNJAM 63 PAGE

## SEARCH CONTROL NO. EVN34M DTIC REPORT BIBLIDGRAPHY

DESCRIPTORS: (U) \*MARKOV PROCESSES, RANDOM VARIABLES, FUNCTIONS(MATHEMATICS), PATHS, ELEMENTARY FARTICLES, INTEGRALS, QUANTUM THEORY CONTINUED AD-A170 258 LINA UNIV AT CHAPEL MALL CENTER FOR STOCHASTIC AD-A170 ... F SON PROCE.

iral Limit Theorem for Markov Paths and Some ties of Gaussian Random Fields. ) A (U)

Technical rept. Sep 85-Aug 86, DESCRIPT: E NOTE:

\*Central limit theorem, Gaussian

IDENTIFIERS: (U)

processes

62P 

PERSONAL -- FAORS: Adler, Robert J. ; Epstein, R. ;

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## UNCLASSIFIED REPORT

yield considerable insight into properties of a Gaussian processes such as Markovianess, self-locality of functionals, etc. Although the last the subject matter is somewhat esoteric, and primarily didactic and expository — we want initiate the uninitiated into some of the for generalised Gaussian processes, or fields, smooth functions or measures on R sub d, our cocks will be simple Markov processes whose is R sub d. Roughly speaking, by summing of the local times of the Markov processes we a central limit theorem type of result, obtain an field. This central limit result, together d results indicating how additive functionals generallied Gaussian processes from simple, elementary Componers in such a way that as many as possible of the Our primary aim is to 'build' versions of -by processes generate additive functionals of properties of these elusive objects become to try to initiate the uninitiated into some of the mysteries of generalised processes via an easily understood model. (Author) paper : - execu **Finct** intuit State Sith T į similar. <u>.</u> į 4

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## SEARCH CONTROL NO. EVN34M DIIC REPORT BIBLIGGRAPHY

STANCE CONTROL MO. LANGER	AD-A170 244 CONTINUED	and refraction of gravity wave ruys is observed for	inertia gravity waves in realistic wintertime flows. A formula is derived for the onset of dynamical instability in inertia-gravity waves, having a lower threshold than	the corresponding amplitude required for convective instability.
THE TOTAL CONTROL OF THE PROPERTY OF THE PROPE	AD-A170 24+ 4/2	PHYSICA. STANICS INC. BELLEVUE WA	(U) Non? Internal Gravity Mave Propagation. Sateon, and Absorption in the Atmosphere.	DESCRIPTI.: NUTE: Final rept. 10 Feb 83-2 Sep 88,

DESCRIPTORS: (U) \*GRAVITY WAVES, \*CONVECTION(ATMOSPHERIC), PRANDIL NUMBER, INTERNAL WAVES, MOMENTUM TRANSFER, TWO DIMENSIONAL, RAY TRACING, WINTE?

IDENTIFIERS: (U) WKB approximation, Eliassen Palm Theorem, PEB1102F, WUAFUSR2310A1

F49620-83-C-0061, F49620-85-C-0032

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TASK NO. MONITOR:

PERSONAL ACTIONS: Durkerton, Timothy J. ;

**23P** 

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REPORT NO

## UNCLASSIFIED REPORT

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the Folsof Convective instabilities in nonlinear, large small of gravity waves; the effects of saturation and self a cration on transient gravity wave, mean flow interaction on transient gravity wave, mean flow interaction on the role of local convective instabilities in propagation and refraction of potential and non fine of the propagation and refraction of inertial and non fines at the propagation and refraction of inertial and non fines, a wind fields. Similations with a two dimens of nonhydrostatic gravity wave model indicate that on whind fields. Similations with a two dimens of nonhydrostatic gravity wave model indicate that on the relief of the result of a mean flow modification closely approximated by Web contains theory in cases where the incident wave field contion theory in cases where the incident wave field contion is observed due to self-acceleration in transic gravity waves. Localization of turbulence in a convex cery unstable gravity wave can greatly reduce the mishey or neat and trace constituents and implies a large turbuler of prandtl number. Significant lateral movement	ABSTRACT (U) Numerical a softence of the softe	Numerical and theoretical studies of
	the role of convective in	stabilities in nonlinear large
	amplit . gravity waves;	the effects of saturation and
	self a cration on trans	sient gravity wave, mean flow
		local convective instabilities
	in pro and turbulent mod	difications of potential
	temperature and trace cons	ittluents in broaking gravity
	Waves; the propagation	and refraction of inertial and
		through observed middle
		amulations with a two
		ic gravity wave model indicate
		I in unstable gravity waves
		dification closely approximated
	by We iration theory	In cases where the incident wave
	field sarly an without	itte. Convection also limits.
and the second second		the evolution to a reflecting
and the second second		even when the incident wave
And the second	ď.	2. Some critical layer
1 - K	٠.	Je to self acceleration in
		ocalization of turbulence in a
mixing , heat and trace constituents and implies a lithibuly ( Prandt) number. Significant lateral movement		ity wave can greatly reduce the
timbuly t Prandtl number. Significant lateral movement	mixing of neat and trace of	constituents and implies a large
	tiirbuly t Prandtl number.	Significant lateral movement

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AD-A170 143	11/2	٧/٢	20/11		AD-A170 243 CONTINUED	CONT INUED	
PENNSYLVANI : MATERI/1.S S.	STE UNIV	UNIVERSITY GINEERING	STE UNIVERSITY PARK DEPT OF STAND ENGINEERING		The results on fluororit	of comparable	The results of comparable-aithough less extensive-studies on fluororinconate glasses and silica sol/gel materials
(U) Surface	stry and	Structural	istry and Structural Effects in the Stress	a Stress	are also reported.	ported.	
Corrostor	. Glass an	Glass and Ceramic Materials	Later is is.		DESCRIPTORS:	(U) +GLASS,	DESCRIPTORS: (U) *GLASS, *CERAMIC MATERIALS, *STRESS
DESCRIPTIVE N.	Final rept	rept. Jan 1	t. Jan 82-Jan 88.		CORROSION, SOLI	SURFACE CHEMIS	CORROSION, SURFACE CHEMISTRY, MOLECULAR STRUCTURE, SILICA GLASS, SODIUM, OXIDES, ALUMINUM OXIDES,
84 86 B	<b>CL</b>			,	SOLUTIONS(M	IXTURES), FRAC	SOLUTIONS(MIXTURES), FRACTURE(MECHANICS), ELASTIC PROPRETIES STATE LOADS FATTAIF(MECHANICS) CRACK
		,			PROPAGATION	, VELOCITY, PL.	PROPAGATION, VELOCITY, PLATEAUS, THRESHOLD EFFECTS,
PERSONAL MUTIN	Pantan	o, Carlo G.	Pantano, Carlo G.; Mecholsky, John J.;	 	ZIRCONATES		
CONTRACT NO.	-5.35R-82-0013	Ç			IDENTIFIERS:	(U) PEB1102	IDENTIFIERS: (U) PEB1102F, WUAFOSR2303A3

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## SEARCH CONTROL NO. EVN34N DIIC REPORT BIBLIOGRAPHY

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practical problems, however, the fault-occurrence behavior itself gives rise to a large number of states in	the underlying stochastic process. Ints paper presents an approach for avoiding the large state space problem in the familt-occurrence model while retaining the benefits	of behavioral decomposition. (Author)	DESCRIPTORS: (U) *FAULT TOLERAKT COMPUTING, *SYSTEMS FRATINFERING *RELIABILITY(ELECTRONICS), COST	EFFECTIVENESS, TRADE OFF ANALYSIS, COMBINATORIAL ANALYSIS, MATHEMATICAL MODELS, MAPKOV PROCESSES	IDENTIFIERS (U) SHARPE(Symbolic Hierarchical Automated	Reliability and Performance Evaluator), SHARPE computer program
DUKE : 11 V DURHAM NC DEPT OF COMPUTER SCIENCE	(U) A Pranachical Combinatorial-Markov Method of Solying Commerce for Reliability Models.	DESCRIPTIVE NOTE: Technical rept.,	259 · · ·	PERSONAL AUTHORS: Sahner, Robin A. ; Trivedi, Kishor S. ;	REPORT : CS-1988-14	CONTRAC: MD. DAAG28-84-C-0045, AFDSR-84-0132

## UNCLASSIFIED REPORT

TR-86-0383

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PROJECT NO.

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SUPPLES: STARY NOTE: Prepared in cooperation with Gould CSD, Urbana, IL.

es, and so forth. Markov models can capture such ting system behavior. However, the size of a model for the evaluation of such a system may grow tially with the number of components in the system. STRACT (U) The design process for complex, fault-tolarint systems needs to be supported by cost-effective and a unstelled techniques for design evaluation in order to facilitate trade-off analysis. Combinatorial models such as facilitates and reliability bluck diagrams are model with the both specification and evaluation of system model with the difficult of not impossible to allow for evaluation of estem and expess of dependency (such as repair of and intermittent fault type dependency), that it and intermittent faults, standby systems with warm as, and so forth. Markov models can capture such interming system behavior. However, the size of a cach that has been successful in connection with an reliability modeling is called behavioral sition of the model along temporal lines, only analyzing a fast submodel (corresponding to error-handling behavior) and a slow submodel wonding to the fault-occurrence behavior). In sition. This approach is based on the ABSTRA: ğğ ž č e O e K

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## DTIC REPORT BIBLIDGRAPHY SEARCH CONTROL NO. EVN34N

ND-A170 2:3 12/1

MASSA - ETTS UNIV AMMERST DEPT OF MATHEMATICS AND STATIL LOS

DESCRIP. . E NOTE: Interim rept. 15 May 85-14 May 86,

(U) Approximate Counting. A Martingale Approach

FEB 7: 14P

PERSONAL AUTHORS: Rosenkrantz, Walter A.;

CONTRAC! 10. AF0SR-82-0167

PROJECT - 2304

TASK NO AS

MONITOR AFOSR TR-86-0377

## UNCLASSIFIED REPORT

ABSTRACT (U) Approximate counting is a probabilistic algoria for keeping track to large numbers of events by means counters of limited range. In this paper we presson an analysis of this algorithm using the slews of the protocol the methods are also applied to the stalysis of the counter which occurs in the elemental back off protocol (Author)

DESCRIP 5 (U) \*COUNTING METHODS, \*ALGORITHMS, PROB4 : IY, RAHDOM VARIABLES, ESTIMATES, INEQUALITIES

IDENTIF: (U) \*Approximate counting, Martingales, Markov ains, PE61102F, WCAF0SR2304A5

AD-A170 226 20/5

UNIVERSITY OF SOUTHERN CALIFORNIA LOS ANGELES

(U) A Precision Laser Spectrometer System.

DESCRIPTIVE NOTE: Final rept. 15 Aug 83-31 Aug 84,

APR 88 131

PERSONAL AUTHORS: Gundersen, Wartin ; Reisler, Hanna ; Wittig, Curt ;

CONTRACT NO. AFOSR-83-0306

PROJECT NO. 2301

TASK NO. A7

MONITOR: AFOSR TM-86-0358

### UNCLASSIFIED REPORT

ABSTRACT: (U) An excimer laser based dye laser system has been purchased and integrated into experiments which involve DOD funding. The laser system is currently used in several important experiments: photodissociation of alighatic nitro and nitroso alkanes, and halogen cyanides; alighatic nitro and nitroso alkanes, and halogen cyanides; bimolecular reactions of C2H, and cluster reactions of H with C02; laser induced influenscence studies in pulsed power switches such as thyratrons. The laser system has already become an integral part of thase studies, and will be used in other funded research in the future.

DESCRIPTORS: (U) \*EXCIMERS, \*DYE LASERS, REACTION
KINETICS, PHOTODISSOCIATION, LASER INDUCED FLUORESCENCE,
THYRATRONS, ALIPHATIC HYDROCARBONS, NITRO RADICALS,
NITROSO COMPOUNDS, ALKANES, HALOGENS, CYANIDES,
ELECTRONIC SWITCHES, FHOTOLYSIS, CHFMILUMINESCENCE

IDENTIFIERS: (U) Aliphatic nitro, Nitroso alkanas, Halogen cyanides, WiAFDSR2301A7, PEB1102F

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# DYIC REPURY BIBLIDGRAPHY SEARCH CONTROL NO. EVN34M

AD-A170 224 CONTINUED	LIGHT, OPTICAL PROCESSING, *IMAGE PROCESSING, *WHITE LIGHT, OPTICAL PROCESSING, FOURIER TRANSFORMATION, SPEECH SIMM FAHT MACHETOROFICS. COLORS, MOISE REDUCTION, SPEECH	ANALYSIS, REAL TIME, SIGNAL PROCESSING, LIGHT MODULATORS, SPATIAL FILTERING	IDENTIFIERS: (U) Speech spectrograms, WUAFOSR230581, PES1102F
AD-A170 2	DESCRIPTO LIGHT,	ANALYSI	IDENTIFIERS PEGI102F
20/6	LIA STATE UNIV UNIVERSITY PARK DEPT OF LENGINEERING	(U) MECH Light Optical Information Processing and Hot., uphy.	DESCRIP® of MOTE: Annual rept. 15 Har 84-14 May 85,
AD::A170 14/8	PENS (1A STATE UNIV	Marine Light Optical I Hot Japhy.	RIP: .t MOTE: Annual

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AF0SR-83-0140 CONTRACT 143

PERSONAL MITHORS: Yu, Francis T. ;

2305 PROJECT 143 AF0SR TR-86-0483 MONITOR

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## UNCLASSIFIED REPORT

ADSTRACT	(U) Explored is the possibility of using
Petur.	solar light for Holographic image processing. The
Jevbe.	a of this technique is the processing system does
تود د	re to carry its own light source. It is very
Eults.	for spaceborne and satellite application.
Deve	is a technique of measuring the noise
perfo	e of a white light processor. A programmable
Kagma	ptic spatial light modulator is applied to white
1001	and processing. The MUSLM responds to polarized
5	ich offers the advantage of color coding signal
proce	The most important aspect of this device must
2	grammability, for which a real time
progr	le optical processor can be realized in
Drac.	A technique is developed for generating a
Lond	ransform hologram with a white light source.
This	itoue is very suitable for reconstructing color
0104	images with white-light processing So is a
tech	of generating a spatial frequency color coded
\$ D00	ctrogram with a white light optical system
This	m not only offers a low cost alternative but
0814	inated the complicated programming procedure
5	tal counterpart. A spatial encoding technique is
- • > • D	for color image retrieval so that the annoying
<b>8017</b>	moire of inges can be eliminated.

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# DIIC REPORT BIBLIDGRAPHY SEARCH CONTROL NO. EVN34N

AD-A170 218 11/6 20/12	SCHITHMEST RESEARCH INST. SAN ANTONIO TX	component (U) Study of the Influence of Metallurgical Factors on Fatigue and Fracture of Aerospace Structural Materi	DESCRIPTIVE NOTE: Final rept. 1 Jan 83-31 Dec 85,
AD-A170 2:3 12/1	ARIZONA . V TUCSON DEPT OF MATHEMATICS	(U) On the First Failure Time of Dependent Multicomponent Relia 11ty Systems.	DESCRIPTIV. RUIE: Technical rept.,

PERSONAL AUTHORS: Lankford, James ; Leverant, Gerald R.; Davidson, David L.; Chan, Kwai S.; CONTRACT NO. PROJECT NO. FEB 85 TASK NO. MONITOR: Shaked, Moshe ; Shanthikumar, J. G. AF05R-84-0206 17 88-0355 :SX: 2304 , S

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## UNCLASSIFIED REPORT

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TR-88-0493

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ABSTRACT: (1) In this paper are considered multicomy out reliability systems where component	repair completion rates depend on the state,	rent repair durations of the other components.	additions on the sets of rates which imply	comming between first failure times of two are found. Sufficient conditions on the	haply that the first failure time of such a better than used (NBU) are olven. Some			
ABSTRACT:	falluce .	Inte is a	Sufficie	such sys	system 13	(1980) at	counters.	are incli

DESCRIPTORS (U) \*MATHEMATICAL ANALYSIS, FAILURE, RELIABILIE REPAIR, STOCHASTIC PROCESSES, MULTIVARIÂTE ANALYSIS, ERGON VARIABLES

DENTIFIERS (U) DMRS(Dependent Multicomponent Reliability systems), WUAFOSR2304A5, PEB1102F IDENTIFIERS

characterization and analytical modeling of fatigue crack tip micromechanics in aerospace structural (A) and Ti) alloys, and (2) identification and modeling of key factors controlling subcritical crack growth and unstable fracture in single crystal nickel-base superalloys. Fatigue crack growth at nexr-threshold rates has been modeled using micro-structurally-controlled displacement, crack tip strain, and the increment of crack advance are micromechanical parameters which depend on the number, spacing, and orientation of the slip lines fatigue crack growth mechanisms in Mi-base superalloy single crystals were examined as a function of crystallographic orientation, stress state and slip character. Using compact-tension and tubular specimens, micromechanical crack tip parameters. The model is based on the concept of crack opening by means of local slip lines whose length and dislocation density are controlled various crystallographic orientations was determined in This report summarizes the results of a fatigue crack growth in Mar-M200 single crystals of both unidirectional and multiaxial cyclic loads, at temperatures where the silp character was either by the alloy microstructure. Crack tip opening two-phase study involving (1) experimental ABSTRACT: (U)

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AD-A170 223

Iccalized (25 C) or homogeneous (980 C).

## SEARCH CONTROL NO. EVN34M DIIC REPORT BIBLICGRAPHY

AD-A170 215	CONTINUED	AD-A170 217
	SYOCIA MINATER SYOCIA MENTALISM ALLOYS	SROWN UNIV
• METAL	+COMPOSITE SIRUCTURES NICKEL ALLOYS.	; ; ;
SUPEHA	AIRFRAMES, AEROSPACE SYSTEMS, CRACK	(U) Interact!
PROP AC.	FRACTURE (MECHANICS), CRYSTALLOGRAPHY,	
GROWTH	AL) MICROSTRUCTURE, FATIQUE (MECHANICS),	JUL 86
CRACK I!	CTURING), COMPOSITE MATERIALS, STRUCTURAL	
PROPERT		PERSONAL AUTHO

IDENTIFIE (U) Aerospace structures, Crack tip, LPN-SWRI-74.5, VUAFOSR2306A1, PE61102F

PRUVIDENCE RI LEFSCHETZ CENTER FOR DYNAMICAL

12/1

ion of Diffusion and Boundary Conditions,

DRS: Halle, Jack K.; Rocha, Carlos

LC05-85-24 REPORT NO. DAAG28-83-K-0028, AFGSR-84-0376 CONTRACT NO.

2304 PROJECT NO

7 TASK NO. AFOSR TR-86-0372 HON1TOR:

## UNCLASSIFIED REPORT

Sponsored in part by Grant NSF-DMS88-SUPPLEMENTARY NOTE: 07058.

ABSTRACT: (U) For systems of reaction diffusions, the existence and behavior of the solutions on the compact attractor are discussed for large diffusion coefficients and boundary conditions which can vary from Neumann to Dirichlet conditions.

DESCRIPTORS: (U) \*PARTIAL DIFFERENTIAL EQUATIONS, \*DIFFUSION, \*SOLUTIONS(GENERAL), EIGENVECTORS, LYAPUMOV FUNCTIONS

IDENTIFIERS: (U) Dirichlet problem, Naumann problem.
Bifurcation theory, WUAFOSR2304A1, PEB1102F

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## SEARCH CONTROL NO. EVN34M DIIC REPORT BIBLIOGRAPHY

AE-A170 211 CONTINUED	semiconductor alloys of Cd(1-x)Mn(x)Se was measured. The fast dephasing times arise from the spin exchange between	free carriers and the localized Mn+ tons.	<pre>DESCRIPIONS: (U) *SEMICONDUCTOR DEVICES, *HETERQJUMCTIONS, *LASER PUMPING, OPTICAL PROPERTIES,</pre>	LIGHT PULSES, GALLIUM COMPOUNDS, INDIUM COMPOUNDS, ALUMINUM GALLIUM ARSENIDE, CADMIUM SELENIDES,	POLARIZATION, SPIN STATES, MAGNETIC MATERIALS, MOLECULAR STRUCTURE, PHENKONS, PHOTOLUMINESCENCE	
AD-A170 211 20/12 9/F	CITY ( ) L NEW YORK ULTRAFAST SPECTROSCOPY AND LASER LAB	(U) Sr except Investigated by Thee Resolved Scoopy Using Feetosecond and Picosecond Laser	Te : logy.	DESCRIPTIVE NOTE: Final rept. 1 Dec 84-30 Nov 85,	MAR (*) 19P	C A C C C C C C C C C C C C C C C C C C

PERSONAL AUTHORS: Alfano, Robert R. ; 9 EAR E

AF0SR-85-0013 447215 CONTRACT NO. REPORT ".

IDENTIFIERS: (!!) Quantum wells, Aluminum indium arsenide, Gallium indium arsenide, Cadmium manganese selenide, Wurtzite, Fem to second time, Picosecond time, MUAFOSR2305C1, PEB1102F

2305 PROJECT 123

ū TASK HD Af0SR TR-86-0500 MONITOR.

## UNCLASSIFIED REPORT

ABSTRAC	(U) Four major accomplishments have been
achi.	to help further the development of faster
prote	and electronic devices. 1. We have shown
4740	cally and experimentally how one can determine
PCCU.	'y one of the most important parameters in
-Icr.	ctures: the bandgap discontinuity in valence and
COUC	and bands at the heterojunction from the
o de	prescence measurements for ultrathin wells in the
T.B.C.	· 15 to 80 A for GaAs/AlGaAs and Galr.1s/AlinAs
5	es. 2. A model was developed using the electron
590	y to describe the much slower carrier - optical
i ou	ss relaxation rate measurements in 2D as
000	to 30, 3. The valence and conduction band
0	on potentials were separately determined for the
first	a in semi magnetic semiconductor alloys of Cd(1-
. ( <b>4)</b> ( X	a from the shift in photoluminescence spectra
Verse	. The valence band deformation potential of
Murtz	*
zinc	de. This technique measures separately the
ň (¶)	it valence and conduction band deformation
pote	is instead of the difference between them, 4. The
91.0	is cosecond spin dephasing time and degree of spin
8118	t of photoexcited electrons in semi magnetic

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# DIIC REPORT BIBLIDGRAPHY SEARCH CONTROL NO. EVN34M

AD-A170 2	SOUTH C	(S)	DESCRIPTI
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	GEORGIA 145T OF TECH ATLANTA SCHOOL OF CIVIL ENGINEERING	(U) failure Processes in Advanced Composite Structures.	· •
	JE CIVIL	osite St	1-15 Nov
	SCHOOL (	X De	DESCRIPTION NOTE: Final rept. 1 Jul 78-15 Nov 80,
20/11	TLANTA	Advanc	100
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4-9	ä	ŝ	2

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PERSONAL AUTHORS: Rehffeld, L. W. ; Atluri, S. N. ;

CONTRACT NO F48620-78-C-0085

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TOR: AF0SR TR-82-0114

## UNCLASSIFIED REPORT

BSTRACT	
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7000	. for; the mixed-would stress and strain
100	ties near the crack front, the intensities of
5	within each ply in the thickness direction of
<b>The 1</b>	the law sate, are embedded in special elements near the

IDENTIFY: 5 (U) Complementary energy principles, Angle ply 12 Cates, Matellic lesinates, WOAFGSR230781, PESTI F

## -A170 208 12/1 14/

SOUTH CAROLINA UNIV COLUMBIA DEPT OF STATISTICS

(U) On Prediction Intervals for Future Observations from the Inverse Gaussian Distribution.

ESCRIPTIVE NOTE: Interim technical rept.,

CAN 86 15

PERSONAL AUTHORS: Padgett, W. J. ; Tsol, S. H. ;

REPORT NO. TR-109, 82F25-1

CONTRACT NO. AFOSR-84-0158

PROJECT NO. 2304

TASK NO. AS

MONITOR: AFOSR TR-86-0412

## UNCLASSIFIED REPORT

ABSTRACT: (U) The problem of predicting, on the basis of an observed sample of size in from an inverse Gaussian distribution, a future observation from the same distribution is discussed. Two prediction intervals that have been proposed in the literature, one of which is an approximate prediction interval, are compared using Monte Carlo simulations. The results indicate that in many of the simulated cases the approximate prediction interval is superior with respect to larger estimated coverage prohabilities and smaller estimated main lengths. This is true in particular for in at least 18 and for 95% and 99%.

DESCRIPTORS: (U) \*LIFE TESTS, \*WATHEMATICAL PREDICTION.
RELIABILITY, QUALITY CONTROL, PROBABILITY DENSITY
FUNCTIONS, GAUSSIAN QUADRATURE, MONTE CARLO METHOD,
STATISTICAL SAMPLES

IDENTIFIERS: (!) Inverse problems, MUAFOSR2304AS, PEB1102F

# DTIC REPORT BIBLIGGRAPHY SEARCH CONTROL NO. EVN34M

AD-A170 204 CONTINUED	thin annular shall at a radius about taics the Bannett	radius characterizing the initially injected current distribution.	DESCRIPTORS: (U) *PARTICLE BEAM WEAPONS, *ELECTRON BEAMS,	<ul> <li>BEAM FORMING, PARTICLE ACCELERATORS, EROSION, ELECTRODES, RAMGE(DISTANCE), CURRENT DENSITY, ENERGY TRANSFER, LOSSES,</li> </ul>	VACUAM APPARATUS, WINDOWS, RADIATION ABSORFTION, RELATIVITY THEORY	IDENTIFIERS: (U) Plasma instabilities, Hose	instabilities, Hollowing instabilities, Bennet radius, WUAFOSR2301A7, PE61102F	
AD-A170 204 20/7	HISSION - SEARCH COMP ALBUQUERQUE NA	(U) Beam congation Experimental Study.	DESCRIPTI. POTE: Arrual rapt.,	MAR 82 360P	PERSONAL > 4.RS: ENdahl, C. A. ;	REPORT NO. AMRC-R-352	CONTRACT + . F48620-81-C-0018	PROJECT N: 2301

## UNCLASSIFIED REPORT

1:58 1:88-0503

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TASK ND. MONITOR: Availability: Document partially illegible.

A program of extensively diagnosed	S to investigate the physics of intense	ss using beam generators. The primary	of this research are the rate of erosion of	the beam, and to investigate resistive	s, such as the hose and hollowing modes, that	ansport of beam energy over stanificant	The tasks of delineating the pressure range	energy transport and measuring the temporal	of the current density profile of the beam	the FX-100 have been accomplished. Maximum	Nort (measured calorimetrically) of the FX-	•		yort was defined by loss of the tail of the		as. Propagation in the window was	d by a high degree of current neutralization	or more), by intense Hight emission	of strong avalanche breakdown, and by the		In as much as 80% of the beam current being carried in a
ABSTRACT:		a c1 a1	object!	the hear	Instabl	Libit t	distanc	for Max	evoluti	produce	energy t	100 bean	8 Torr	enargy t	Dean at	104 Pre:	characte	(about 8	Suggesti	onset of a	in 84 m

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# DIIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN34M

AD-A170 202 CONTINUED	PERCEPTION, *MOTOR REACTIONS, TEST METHODS, PILOTS,	UDDEKENT(PSYCHOLOGY), LEARNING, HEARING, VISION, PATTERN IECOGNITION
AD-A	* 0	32
6/19		(U) Neuro, of tive Pattern Analysis of Auditory and Visual Information.
0/10	MANCISCO CA	orn Analysi
8/10	LAB SAN FI	itive Patte
AD-A170 202	REG SYSTE : LAB SAN FRANCISCO CA	(U) Maure tti

IDENTIFIERS: (U) Evoked potentials, PES1102F, MUAF0SR231334

FEB 86

DESCRIPTIVE '4:TE: Interim rept, 24 Mar 84-31 Jan 86,

F49620-84-K-0008 CONTRACT NO

PERSONAL AUTHERS: Gevins, Alan S. ;

2313 PROJECT NO

2 3 3 3 - 0485 TASK NO. MONITOR:

## UNCLASSIFIED REPORT

ABSTRACT: actively	The EEG Systems Laboratory has been coving the measurement of neuroelectric
substrate	f human higher brain functions. The short
ters ob	has been to use the EEG to predict
decrement.	in performance consequent to attentional
lapses or	lapses or vetigue. The long-term objective is to develop
Dev tech	ies for enhancing cognitive abilities. The
1 aborator	-
controlle	adigns. The paradigms test elementary
cognitive	S perceptuomotor functions critical for
flying h	performance aircraft and for performing other
tasks vit	*
. pezkleue	e an intendisciplinary, inter-laboratory
study of	ational fatigue. This unique set of data
consists	37 channels of neurophysiological,
physiolog	al and buhavioral data recorded from 4 Air
Force (1)	ar test pilots performing several cognitive
and perco	vactor tasks specially designed to require a
high cons	ant of attention, memory, judgement and motor
coording	Recordings were made in 3 sessions dealing
vith task	arning, operational fatigue (about 16 hours
of contin	of continues performance), and automatization of task
performa:	

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EVN34M

## SEARCH CONTROL NO. EVN34M DIIC REPORT BIBLIOGRAPHY

1/1 AD-A170 201 MOUXIMELL INTERNATIONAL THOUSAND DAKS CA SCIENCE CENTER

(U) Nonlicer Wave Propagation Study

DESCRIPTIVE HOTE: Final rept. 1 May 83-30 Oct 85

APR 16

Bulau, J. R. ; Tittmann, B. R. ; PERSONAL ALTHURS:

SC5361-10FR REPORT NO. F48620-83-C-0065 CONTRACT 1:

2309 PROJECT NO

**A** 2 TASK 180

18 - 86-0197 AF USR MONITOR:

## UNCLASSIFIED REPORT

that the forced supt resonance technique is a for measuring the Q of linear analastic and for defining the transition amplitude from a lastic behavior to nonlinear behavior. For evaluating losses in materials at high amplitudes, which exceed the elastic limit, the best technique requires simults has measurements of the time functions of stress under conditions that simulate seismic loading attenuation of seismic waves in rocks. We We have examined some of the methods available for use in the laboratory to measure the / as possible. inelest: . colos . and str. concluci best sur materis. ABSTRACT: Inser

SCRIPT( (U) \*NONLINEAR SYSTEMS, \*GRANITE, \*ROCK, \*NONLIN \* PROPAGATION ANALYSIS, ELASTIC PROPERTIES, NEAR FIELD, ALLEMATION, PRESSURE, LOOPS, HYSTERESIS DESCRIPT

Westerly granite, PE61102F 3 WUAFOSE JAA2

AJ-A170 200

YALE UNIV NEW HAVEN CONN SCHOOL OF MEDICINE

Studies of Organophosphate Effects on Retinal Physiology, Cell Biology and Biochemistry. DESCRIPTIVE NOTE: Final progress rept. 1 Apr 82-31 Mar 84,

SEP 85

PERSONAL AUTHORS: Reid, Ted W. ; Stein, Peter J. ;

F49620-82-C-0050 CONTRACT NO.

2312 PROJECT NO.

A5 TASK NO. AF0SR TR-88-0498 MONITOR:

## UNCLASSIFIED REPORT

was studied in three different cell types. 2)
Electroretinograms (ERG's) were recorded from isolated
retinas of Bufo marinus during superfusion with the
compound. 3) Intracellular recordings were made from rod
photoreceptors in isolated retinas while superfusing with the cornea. The data obtained show that both DFP and fluoride alter various enzymatic and physiological functions in cultured cells, the isolated ratins, and rod outer sogment membranes. The data obtained in the project reveal that both DFP and fluoride may alter ocular observed. 6) We have measured the transport of DFP across sufficiently interesting to demand further investigation. interactions and the erzymology of the cyclic nucleotide biochemistry and physiology through other than classical NaF. 4) The effects of fluoride on the protein-protein acetylcholinesterase mechanisms. While a number of the effects on the eye in several ways: 1) Dose response curves for DFP inhibition of cellular synchesis of DNA binding to rod outer segment and retinal proteins was We have approached the problem of 3FP cascade of rod outer segments were studied. 5) DFP studies performed are preliminary, the data are 3 ABSTRACT:

ESCRIPTORS: (U) \*ORGANIC PHOSPHORUS COMPOUNDS, \*PROPYL RADICALS, \*FLUORINE, \*TOXICITY, \*RETINA, VISION, DOSAGE, CELLS(BIOLOGY), BIOSYNTHESIS, DEOXYRIBONUCLEIC ACIDS, DESCRIPTORS:

A5-A170 200

AD-A170 201

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## SEARCH CONTROL NO. EVN34M DIIC REPORT BIBLIOGRAPHY

CONTINUED AD-A170 BX INHIB: 1: M. ELECTRORETINDORAPHY, FLUORIDES, 10NS, PROTE: 5 MOLECULE MOLECULE INTERACTIONS, CORNEA, TRANS. 1 PROPERTIES, PHOSPHATASES, ESTERASES

MENTIFIES (U) DEP(Diisopropylfuorophosphate), Phospies Diisopropylfluoro, PEB1102F, WUAFDSR2312AS

20/11 1/8 AD-A170 199

MASSACHUSETTS INST OF TECH CAMBRIDGE DEPT OF MATERIALS SCIENCE AND ENGINEERING

(U) A Study of the fatigue Behavior of Short Cracks in Nickel-Based Superalloys.

DESCRIPTIVE NOTE: Progress rept. 1 Jan 84-30 Nov 85,

NOV 85

PERSONAL AUTHORS: Pelloux, R. M. ; Romanoski, G. R. ; Feng, J.

AF0SR-76-2828, AF0SR-84-0075 CONTRACT NO.

2306 PROJECT NO.

TASK NO.

MONITOR:

AF0SR TR-88-0224

## UNCLASSIFIED REPORT

Rene 95. Crack growth rates were measured for crack lengths from 50 microns to 2mm. Three regimes of behavior were generally observed: 1) an initiation regime in which crack propagation rates are rearly zero; 2) a short crack regime in which crack propagation rates increase slouly and variably with crack length but with propagation rates higher than would be predicted by LEFM in the nearthreshold regime; and 3) a long crack regime in which conventional fracture mechanics is applicable. The threshold criterion and crack propagation rates for short cracks are shown to be strongly dependent on the stress ratio. Negative stress ratios promotes rapid crack initiation. This behavior is confirmed theoretically by a Dugdale model which establishes a criterion for crack extension based on the accumulation of plastic work in the crack tip plastic zone. Fractographic investigations show that short cracks propagate in a transgramlarcrystallographic mode following a zig-zag path which is macroscopically perpendicular to the applied stress. An experimental technique was developed to generate small STRACT: (U) Fatigue behavior of short cracks was studied in Inconel X-750, Inconel 718, Maspaloy and PMeliptical crack initiation sites using a pulsed Nd-YAG laser. An AC potential drop system for continuous and

AD-A170 2:0

## SEARCH CONTROL NO. EVN34M DTIC REFORT BIBLIOGRAPHY

	ERIALS SCIENCE AND	(U) Advanced High Temperature Coating Systems Beyond Current State of the Art Systems.  DESCRIPTIVE NOTE: Final technical rept. 1 Jan 80-31 Dec	APR 86 143P PERSONAL AUTHORS: Ashary,A.;Meter,G.H.;Pettit,F.S.;
11/3	PITTSBURGH UNIV PA DEPT OF MATERIALS SCIENCE AND ENGINEERING	(U) Advanced High Temperature Coating Systems Beyond Current State of the Art Systems.  DESCRIPTIVE NOTE: Final technical rept. 1 Jan 80-31	143P S: Ashary,A.;Mele
AD-A170 182	PITTSBURGH UNI ENGINEERING	(U) Advanced His Current Sta	APR 86 PERSONAL AUTHORS
CONTINUED	autowated measurements of crack length at alayated temperature has been assembled.	DESCRIPTORS (U) *CRACK PROPAGATION, *SUPERALLOYS, *NICKEL A. S. *FATIGUE(MECHANICS), TURBINE COMPONENTS, CRACKS, I. H. RATES, MATHEMATICAL PREDICTION, FAXECTURE AND SHILLS, HIGH TEMPERATURE, STRESSES, RATIOS, MICKEL AS TANDOMER ENDORSHINGS.	(U) Short cracks, Crack tips, Waspaloy, /. Crack propagation rates, Dugdale models, /. Crack initiation, Meodymium YAG lasers,
AD-A170 189	autosated temperatur	DESCRIPTORS *NICKEL A CRACKS, I FRACTURE MICKEL A	IDENTIFIERS Rene-95 F

AF05R-80-0089 CONTRACT NO.

AF 05R2306A1

Threshol. PEB1102F 2306 PROJECT NO.

MONITOR: TASK NO.

### AF0SR TR-88-0481

UNCLASSIFIED REPORT

ABSTRACT: (U) Alpha-Alido3 and the Sido are the two most effective reaction product barriers that can be used to protect alloys from oxidation at temperatures above 1000 C. In the present work the techniques to improve the adherence of Alido3 scales on MCrAi coating alloys are studied and the characteristics of Sido scales formed on Mi-Si alloys are investigated. The theoretical aspects of oxide-metal adherence of oxide cales in general are clearly defined the examined and the factors which affect the adherence of oxide scales in general are clearly defined to exide scales in general are clearly defined. The improved scale adherence by active element additions is prasented. Experimentally, the effects of small additions of yttrium and hafnium on the isothermal and cyclic oxidation behavior of McrAi type alloys are studied. The base alloys used in the study of Alido scale adherence were Ni-Zowitkor-lowikal and Co-Zowitkor-lowikal. cyclic oxidation tests were carried out at 1100 C for varying durations. Emphasis is given to the in situ study of the oxide scale failure process. An acoustic emission (AE) technique was employed for this purpose. The above study indicates that the Ai203 scale failure processes are quite different in the doped (i.e. containing oxygen active elements) and updoped alloys. Although both

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# SEARCH CONTROL NO. EVN34M DIIC REPORT BIBLIOGRAPHY

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yttria... and hafnium can be very effective in improving the action of A1203 scales, there are some basic different in their oxidation behavior in alloys. Therefore the optimum conditions for their addition also different loys in the Ni-Si system (5 to 22.5ut% Si) have sed in the temperature range 800 to 1100 C. O C-0

(U) \*PROTECTIVE COATINGS, \*ALUMINUM OXIDES, SIGNIDE, HIGH TEMPERATURE, OXIDATION RESISTANCE, SIGNIS, ALUMINUM ALLOYS, NICKEL ALLOYS, SILICON ESION, ADOITIVES, YITRIUM, HAFNIUM, COBALT, CAPING ALLOYS FAILUS DESCRIPT SILIC C PROPELL

**WUAF 05R2308A2** 3 I DENTIFIE

12/1 AD-A170 187

BROWN UNIV PROVIDENCE RI LEFSCHETZ CENTER FOR DYNAMICAL SYSTEMS Upper Semicontinuity of Attractors for Approximations of Semigroups and Partial Differential Equations. 3

Technical rept., DESCRIPTIVE NOTE:

OCT 85

Hale, Jack K. ; Lin, Xiso-Biso ; Raugel, PERSONAL AUTHORS: Genevieve :

LCDS-85-29 REPORT NO.

DAAG29-83-K-0028, AF0SR-84-0378 CONTRACT NO.

2304 PROJECT NO.

7 TASK NO.

AF0SR TR-88-0374 MONITOR:

## UNCLASSIFIED REPORT

State Univ., East Lansing. Dept. of Mathematics and Ecolopolytechnique (France). Centro de Mathematiques Appliquees. Sponsored in part by Grant NSF-DMS85-07058. SUPPLEMENTARY NOTE:

acompact attractor and the evolutionary equation has a compact attractor and the evolutionary equation is approximated by a finite dimensional system. Conditions are given to ensure the approximate system has a compact attractor which converges to the original one as the approximation is refined. Applications are given to parabolic and hyperbolic partial differential equations.

SCRIPTORS: (U) \*APPROXIMATION(MATHEMATICS), \*PARTIAL DIFFERENTIAL EQUATIONS, CONVERGENCE, BANACH SPACE, WAVE DESCRIPTORS: **EQUATIONS** 

lENTIFIERS: (U) \*Attractors, \*Semigroups(Mathematics), Semicontinuity, PEB1102F, WUAF0SR2304A1 IDENTIFIERS:

SEARCH CONTROL NO. EVN34M

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DIIC REPORT BIBLIOGRAPHY

PITTSBURGH UNIV PA CENTER FOR MULTIVARIATE ANALYSIS COLLEGE PARK CENTER FOR AUTOMATION 12/1 AD-A170 185 MARYLAND RESEARCH

(U) Normalizing Transformations of Some Statistics of Gaussian ARMA Processes. eld Identification from a Sample. 1. The

Technical rept., DESCRIPTIVE NOTE:

24P FEB 85 Taniguchi, M. ; Krishnalah, P. R. ; Chao, R. PERSONAL AUTHORS:

TR-86-05 REPORT NO.

Rosemblatt-Roth, Millu ;

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REPORT NO.

CAR-TR-186, CS-TR-1563 F48320-85-K-0009

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F49520-85-C-0000 CONTRACT NO.

2304 PROJECT NO.

¥ TASK NO.

AF0SR TR-88-0395 MONITION:

# UNCLASSIFIED REPORT

ESTRACT: (U) In this paper, the authors investigate Edgeworth type expansions of certain transformations of some statistics of Gaussian ARMA processes. They also investigated transformations which will make the second order part of the Edgeworth expansions vanish. Some ramerical studies are made and they show that the above transformations give better approximations than the usual approximation. (Author) ABSTRACT:

the given class that approximates the field of the sample. This paper derives a solution was for the simple case of a field consisting of random variables. Subsequent papers will types of fields, e.g., having Markov

Numerical examples are given, showing that nations can be obtained based on relatively sizes. In particular, this approach can be rendom field models that generate given range taxture, and so can be applied to

assification or segmentation. (Author)

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STATISTICAL SAMPLES,

"HEATHEMATICS), THEOREMS, INVERSION, RANDOM EQUENCES MATHEMATICS), PROBLEM SOLVING. SSES, STATIONARY

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PEBI102F, WIAFOSR2304A7

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uss, and given a data sample generated by the considers the problem of finding

specific

ABSTRACT:

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Given a random field belonging to some

UNCLASSIFIED REPORT

MONITOR: TASK NO.

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PROJECT NO

CONTRACT NO

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ESCRIPTORS: (U) \*TRANSFORMATIONS(MATHEMATICS),
\*MORMALIZING(STATISTICS), MUMERICAL ANALYSIS,
APPROXIMATION(MATHEMATICS), EXPANSION, TIME SERIES
ANALYSIS, MAXIMUM LIKELIHOOD ESTIMATION, MULTIVARIATE
ANALYSIS. DESCRIPTORS:

IDENTIFIERS: (U) Edgeworth expansion, ARMA( Autoragressive Moving Average)

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# DIIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN34M

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4D-A170 183	NORTH CA
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(U) Data 1 amplomations in Regnession Analysis with Applications to Stock - Recruitment Relationships.

DESCRIPTIVE MITE: Technical rept. Aug 85-Aug 88,

15 21P

PERSONAL AL AGRS: Ruppert, David ; Carroll, R. J. ;

CONTRACT NO F48820-82-C-0008, NSF-MCS87-3128

PROJECT NO 2304

TASK NO. ...5

MONITOR: 1005R

# UNCLASSIFIED REPORT

ABSTRACT: All The authors propose a methodology for fitting to cretical models to data. The dependent variable in response) and the model are transformed in the same APY. Two types of transformations, power transform also and to induce constant variance. This method is sapplied to the stock-recruitment data of four fish stocks. Also discussed are estimates of the conditional mean and the conditional quantiles of the original response.

DESCRIPTOF (U) \*MATHEMATICAL MODELS,
\*FRANSF( \(\times\) 'ANS(MATHEMATICS), \*FISHERIES, FISHES,
\*REGRESS! \(\times\) 'ANALYSIS, FITTING FUNCTIONS(MATHEMATICS),
VARIATIC ESTIMATES, WEIGHTING FUNCTIONS, SKEWNESS,
VARIABLE.

IDENTIFIEF (U) \*Biomathematics, PEB1102F. MUAFOSR, 145

AD-A170 182 9/2 9/4 5/8

NURTHEASTERN UNIV BOSTON MASS DEPT OF ELECTRICAL ENGINEERING

(U) Asynchronous Finite State Machines. Simulations with Imposed Processing Constraints.

DESCRIPTIVE NOTE: Tachnical rept.,

APR 86 3

PERSONAL AUTHORS: Kwonkem, S. Y. ; Koliski, M. E. ; Miller, A. T. ; Johnson, T. L. ;

CONTRACT NC. F49820-£2-C-0080

MONITOR; AFOSR TR-88-0448

# UNCLASSIFIED REPORT

Supplementary NOTE: Prepared in cooperation with General Electric Co., Schenectady, NY and Universite de Yoounde, Cameroun.

continuous time discrete stots processes can be accurately represented by asynchronous finite stote machines, and in particular, a subclass of these machines tend, in particular, a subclass of these machines tends simple asynchronous machines, or SAMs. To understand the role that practical signal processing constraints may play in characterizing SAM behavior, a simulator capable of incorporating such constraints has been written. The architecture of this simulator and examples of its use are presented.

DESCRIPTORS: (U) \*AUTOMATA, \*COMPUTER APPLICATIONS, \*CONTROL SYSTEMS, CONTROL SYSTEMS

IDENTIFIERS: (U) SAM(Simple Asynchronous Machines), PEB1102F, WUAFOSR2304A1

# DTIC REPURT BIBLIDGRAPHY SEARCH CONTROL NO. EVN34M

AB FOR INFORMATION

Optimization

er, Sanjoy K. ;

AD-A170 177	17/1	20/11	AD-A170 174 12/1
STANFORD UNI-	CA DEPT	STANFORD UNITY OF DEPT OF MATHEMATICS	MASSACHUSETTS INST OF TECH CAMBRIDGE LAB FO
(U) Free Bour y Problems in Mechanics.	, Proble		AND DECISION STRINGS
0CT 84	ď		Description and a second results
PERSONAL AUTH	Ke.1.	Keller, doseph B. ;	TOUR PART OF THE PROPERTY OF T
CONTRACT NO.	SR-85-0007		, activities
PROJECT NO.	-		PRODUCT ACTIONS. GETTERS, SECTOR STATES OF THE SECT
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HONITOR: AF			CONTRACT NO. DANGER OF CLOSE, SCORE OF CLOSE

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AFOSR TR-88-0349

HONITOR: TASK NO.

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PROJECT NO.

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ally, to minimize the elongation due to its a load at its lower end. Hooke's law is a the elongation, and the calculus of and to find that taper which minimizes it. Pub. In \$1AM Review, v26 n4 p569-571 It is shown how to taper a heavy rope, SUPPLEMENTARY 1 .. (E: ABSTRACT: (1) hanging veri our weight :

\*CALCULUS OF VARIATIONS, \*ROPE.
'40), ELASTIC PHOPERTIES, APPLIED
:475 SUSPENDING! CESCRIPTORS:

variations 1.

Hookes law, Lagrange multipliers, anics, MUAFOSR2304A4, PE61102F Classical m IDENTIFIERS:

## UNCLASSIFIED REPORT

Carlo algorithm for combinatorial optimization. The annealing algorithm simulates a nontationary finite state Markov chain whose state space is the domain of the state Markov chain whose state space is the domain of the cost function to be minimized. We analyze this chain focusing on those issues most important for optimization. In all of our results we consider an arbitrary partition optimization: important special cases are when I is the set of minimum cost states or a set of all states with sufficiently small cost. We give a lower bound on the probability that the chain visits I at some time. This bound may be useful even when-the algorithm does not converges. We give conditions under which the chain converges to I in probability and obtain an estimate of the rate of convergence as well. We also give conditions under which the chain visits I infinitely probability. almost always, or does not converge to I with probability ABSTRACT: (U) 1. (Author)

ESUMIPTORS: (U) +MONTE CARLO METHOD, \*ALGORITHMS, COMBINATORIAL ANALYSIS, OPTIMIZATION, CONVERGFYCE, ESTIMATES DESCRIPTORS:

Simulated annealing, Markov chains 3 IDENTIFIERS:

A71 0718-CA

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EVN34M 8 PAGE

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SEARCH CONTROL NO. EVN34M DITC REPORT BIBLIOGRAPHY

8/3 AD-A170 173 BROWN UNIV PROVIDENCE RI DIV OF ENGINEERING

441, PEB1102F CONTINUED

AD-A170 1 4 MUNTOS (U) Efficient Parameter Identification for a Class of Billinear Oifferential Systems.

6

PERSONAL AUTHORS: Pearson, E. A. ; Lee, F. C.

AF05R-85-0300 CONTRACT NO.

2304 PROJECT NO.

₹ TASK NO. AF0SR TR-86-0430 MONITOR:

UNCLASSIFIED REPORT

UPPLEMENTARY NOTE: Pub. in IFAC Identification and System Parameter, pi61-145 1985. SUPPLEMENTARY NOTE:

Assumptial time intervals of finite turation, a least sequencial time intervals of finite turation, a least squares parameter identification technique is developed for a class if bilinear differential systems which avoids the usual point-wise-in-time cross multiplication between the input-output dots and avoids dealing with all unknown initial (boundary) conditions over each finite time initial (boundary) conditions over each finite time interval. The basis of the technique is Shinbrot's method of morant functionals using commensurable sinusoids as the modulating functions. The main result is the demonstration that the sequential least squares procedure for the bilinear system parameters with sinusoidal inputs can be set up using a single fast fourier Transform of the cutput data over each finite time interval which is the formulation for a linear system model. (Author) Using sinusoidal probing «ignals on ABSTRACT: (U)

DESCRIPTORS: (U) \*CONTROL SYSTEMS, \*PARAMETRIC ANALYSIS, \*LEAST SQUARES METHOD, IDENTIFICATION, TIME INTERVALS, FAST FOURIER TRANSFORMS, METHOD OF MOMENTS, REPRINTS

DENTIFIERS: (U) •Blitnear differential systems, WUAFOSR2304A1, PEB1102F IDENTIFIERS:

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EVN34M 82 PAGE

# DIIC REPORT BIBLIDGRAPHY SEARCH CONTROL NO. EVN34M

40-4170 171		AD-A170 170 12/1
αx	<u> </u>	PITTSBURGH UNIV PA DEPT OF MATHEMATICS AND STATISTICS
(11) Lax-Eri.	in tax-fri. 1chs and the Viscosity-Capillarity Criterion.	(U) A Multivar ate Extension of Hoeffding's Lema.
	12P	pescriptive Note: Technical rept.,
ā	Sisarrod Marshall ;	NOV 85 24P
ON TOWN		PERSONAL AUTHORS: Block, Henry W. ; Fang, Zhaoben ;

# UNCLASSIFIED REPORT

A: R T. e8-0378

SUPPLEMENTA: "x.TE: Pub. in Physical Mathematics and Nonlinear v. tial Differential Equations, p75-84 1885.	It has been shown by Lax some time ago
Pub. Differ	the section of
. C	
SUPPLEMENTA:	

that solutus salifate the will actually scritterion was critterion with	trat solutes of hyperbolic conservation laws obtained as limits the Lax-Friedrichs finite difference scheme will actually satisfy an 'entropy' admissibility criterion as goal of this paper is to attempt to extend criterion as goal of this paper is to attempt to extend
Lax's 108.	2 <b>.</b>
Specifica Lax-Frie	the author compares shocks obtained by the scheme that those permitted by the state of the state of that for
VISCOSITY ISOTheres	tion it is expected that shocks produced by
Cax-Frie	s will gatisfy the Viscosity-Capillality (Author)

SHOCK
I SOTHERMS.
DESCRIPTORS (U) *COMPRESSIBLE FLOW, *1507HERMS, SHOCK WAVES, VISITY, CAPILLARITY, REPRINTS
·U)
DESCRIPTORS WAVES, VI

DENTIFIERS (U) +Van der Maais fluids, Lax Friedrichs finite difference method, WUAFOSR2304A1, PR61102F IDENTIFIERS

# UNCLASSIFIED REPORT

AF0SR TR-88-0410

MONITOR: TASK NO.

N00014-84-K-0084, AF0SR-8-1-0113

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CONTRACT NO. PROJECT NO. AS

TR-85-10

REPORT NO.

AF05R-81 0172

CONTRACT NO. PROJECT NO. TASK NO. MONITOR:

1.304

BSTRACT: (U) Hoeffding's Lemma gives an integral representation of the covariance of two random variables in terms of difference between their joint and marginal probability functions. This identity has been found to be useful tool in studying the dependence structure of various random vectors. A generalization of this result for more than 2 random variables is given. This involves an integral representation of the multivariate joint cumulant. Applications of this result include cumulant. Applications of this result include characterizations of independence. various types of dependence are also given. (Author) ABSTRACT:

DESCRIPTORS: (U) \*MULTIVARIATE ANALYSIS, THEOREMS. RANDOM VARIABLES, COVARIANCE, DISTRIBUTION FUNCTIONS

Hosffdings Lemma, WUAF05R2304A5. IDENTIFIERS: (U) PEB1102F

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EVN34M

# SEARCH CONTROL NO. EVN34M DIIC REPORT BIBLIOGRAPHY

MAXIMUM LIKELIHOOD ESTIMATION, LEAST SQUARES METHOD. SIGNAL TO HOISE RATIO, METHOD OF MOMENTS

CONTINUED

AD-A170 189

IDENTIFIERS: (U) Fast algorithms, Shinbrots method, WUAFDSR2304AS, PE61102F

AD-A170 159

PROVIDENCE RI DIV OF ENGINEERING ATMN NACHE

(U) Parameter (Santification of Linear Differential Systems via Fourier Based Modulating functions,

З С DEC 85

45: Pearson, A. E. ; Lea, F. C. PERSONAL AUT:

AF058-85-0300 CONTRACT NO

1304 PROJECT NO TASK NO.

HONI TOR:

: ନ : ଓ - 0428

# UNCLASSIFIED REPORT

AUTE: Pub. in Control-Theory and Advanced of 14 p239-266 Dec 85. AUTE: SUPPLEMENTA Technolog,

to station can be useful to the putations require calculating a finite set is coefficients of time limited inputation avoiding the necessity to estimate a conditions for a one-shot estimate.

It is noted that a fast fourier transform be utilized for these calculations, thus astalgorithm of the identification of the shown that the frequency estation can be useful in enhancing the caralled to the modulated data in the The parameter identification of linear system is considered from the viewpoint of assical method of moment functionals using sinusoids as the modulating functions. This dayaloped for the stochastic case of additive Simulation results are In hoise in the data which effectively that when the parameter identification is in a recursive mode. Similation results are cofsy measurements. A maximum likelihood (Hustrate the developments, (Author) Shinbrot : output dus unknown t least sq. algorithm providing continuo ABSTRACT: different. signal to presence estimate white gau domain ir facilitat underlyir of Fourie COMMENSOR consider fric 1uded

(U) «LINEAR DIFFEPENTIAL EQUATIONS. ANALYSIS, REPRINTS, FAST FOURTER TRANSFORMS. DESCRIPTORS

AD-A170 163

### UNCLASS 1 F 1 ED

DIIC REPURI BIBLIDGRAPHY SEARCH CONTROL NO. EVN34M

AD-A170 167 12/1

STANFORD : . . CA DEPT OF MATHEMATICS

(U) On the Joility of Inverse Scattering Problems, 64 12P

84 12P
PERSONAL AU 5: Faucett, John;
CONTRACT NO AFOSR-85-0007

PROJECT ND. 2304

MONITOR: A R

TASK NO.

1 53-0455

# UNCLASSIFIED REPORT

SUPPLEMENTARY 1-3TE: Pub. in Wave Motion, v6 p489-489 1884

ABSTRACT: 11. Some aspects of the time-dependent inverse scattering. Diems are discussed. Then some simple stability : lits are presented. Several analytical and mamerical : ples are given to illustrate them. (Author)

DESCRIPTORS OF FINE SCATTERING, STABILITY, TIME OF DEPENDENCE OF MERICAL ANALYSIS, BOUNDARY VALUE PROBLEMS, REPRINTS

IDENTIFIERS. (U) PEB1102F, WUAFOSR2304A4

AD-A170 166 12/1

STANFORD UNIV CA DEPT OF MATHEMATICS

(U) A Rigorous Derivation of the Miracle Identity of Three-Dimensional Inverse Scattering.

OCT 84 4P

PERSONAL AUTHORS: Chaney, Margaret;

CONTRACT MO. AF0SR-85-0007

PROJECT NO. 2304

TASK NO. A4 Mctitor: Afosf

AFOSR TR-86-0456

# UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Journal of Mathematical Physics, v25 n10 p2888-2880 Oct 84.

Physics, v25 n10 p2888-2890 Oct 64.

ABSTRACT: (U) The large energy asymptotic behavior of scattering solutions of the three dimensional time dependent Schrodinger equation is investigated. The second term of the expansion leads to the 'miracle' of Newton's three dimensional inverse scattering theory.

DESCRIPTORS: (U) \*SCHRODINGER EQUATION, \*SOLUTIONS(GENERAL), ASYMPTOTIC SERIES, FOURIER TRANSFORMATION, INVERSE SCATTERING, THREE DIMENSIONAL, REPRINTS

IDENTIFIEPS: (U) PEB1102F, WUAFOSR2304AS

# SEARCH CONTROL NO. EVN34M DIIC REPORT BIBLIDGRAPHY

TEXAS A MED M UNIV COLLEGE STATION DEPT OF ELECTRICAL ENGINE . MAD
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intically Robust Detection of Stochastic Signals taminated Noise, (C) As

MAY 86

Schnitzer, M. S. ; Halverson, D. R. ; PERSONAL 41, THORS:

AF05R-\$2-0033 CONTRACT 12)

2304 PROJECT >:

TASK NO

IR-86-0433 AF OSR MONITOR

# UNCLASSIFIED REPORT

 $^{\rm APY}$  NOTE: Presented at Annual Allerton  $^{\rm d}$  on Communication, Control, and Computing (23rd) . 2-4 .

consider the discrete time detection of signals in white noise, where the univariate sity is known perfectly only on an interval a origin. We present a method to enhance the conformance of the detector by exploiting this t condition. We then provide examples to show oved performance is indeed obtained. (Author) is of the detector to the remaining inexact and at the same time preserve robustness of the univariate noise density via a stocha, know]. **ABSTRACT** that AS YEO 2067 Proper 00150 about t

S (U) \*NOISE, \*SIGNALS, \*DETECTION. STIMI DESCRIPT

(U) Stchastic signals, Detection(Robust), 'aminated), PE61102F

12/1 AD-A170 164

FLORIDA STATE UNIV TALLAHASSER DEPT OF STATISTICS

Bayesian Nonparametric Estimation of the Median. Part 2. Asymptotic Properties of the Estimates. ŝ

PERSONAL AUTHORS: Doss, Hant ;

REPORT NO. FSU-STATISTICS-M857, P-459

F49620-85-C-0007, NSF-MCS80-24849 CONTRACT NO.

2304 PROJECT NO.

TASK MD.

TR-88-0407 AFOSR MONITOR:

## UNCLASSIFIED REPORT

JPPLEMENTARY NOTE: Pub. in The Annals of Statistics, vi3 nd p1445-1484 1985. See also Part 1, AD-A170 122. SUPPLEMENTARY NOTE:

consistency properties of the bayes estimates computed in Doss (1885) are investigated when the prior on F is of median of Fequal to but Fotherwise unknown, it is desired to estimate theta. In Doss (1985) priors are put on the pair (F, theta), the marginal posterior distribution of theta is computed, and the mean of the posterior is taken as the estimate of theta. In this paper a frequentist point of view is adopted. The support of these priors. It is shown that if the epsilon sub i are i.i.d. from a discrete distribution, then the Bayes estimates are consistent. However, if the distribution of the epsilon sub i's is continuous, the Bayes estimates can be inconsistent. (Author) the Dirichlet-type. Any F whose median is 0 is in the STRACT: (U) for data theta + epsilon sub i = i, ... where epsilon sub i are i i.d. similar to F with the ABSTRACT:

SCRIPTORS: (U) \*NONPARAMETRIC STATISTICS, \*ESTIMPTES, BAYES THEOREM, CONSISTENCY, ASYMPTOTIC NORMALITY, DISCRETE DISTRIBUTION, REPRINTS · DESCRIPTORS:

Median, Continuous distribution, 3 IDENTIFIERS: PE81102F

AD-A170 155

UNCLASSIFIED

EVN34M

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PAGE

# SEARCH CONTROL NO. EVI.34N OTIC REPORT BIBLIOGRAPHY

AD-A170 16.	12/1	AD-A170 162	17/2	14/4
NORTH C.	NORTH C. THA STATE UNIV AT RALEIGH DEPT OF MATHEMATICS	CLEMSON UNIV SC	SC	
(U) Rank Solui	icient Least Squares and the Numerical of Linear Singular Jeplicit Systems of	(U) Exact and Models for	Approximat r Telecomm	(U) Exact and Approximate Dependent Fallure Models for Telecommunications Networks,
		MAR 85	<b>d</b>	

AF05R-84-0240, (NSF)-(DMS)83-18028 Campbell, Stephen L.; SR 8**8-04**20 2304 PERSONAL A CONTRACT H. PROJECT NO TASK NO. MONITOR:

# UNCLASSIFIED REPORT

SUPPLEMENT * NOTE: Pub. in Contemporary Mathematics, v47	Y NOTE:	į	Ē	Š	XOTBT.	2	them.	at 1C	<b>*</b>	_	7
2	,,										₹
ABSTRACT: 111 An approach for the numerical solution of	<b>§</b>	approac	ئا رق	-		rica	05	lutio	žo ož		
linear a " us of differential equations of the form A(t)	to sur.	differe	int is		t lon:	s of	the	for	1 A(t	_	
x'(t) + ·	(1) v	7 (2) .	=======================================	ACC.	nout	761	is di	Scus	Pes		
The key		age sir	Oach.	=======================================	200	וונונו	o uc	•	ark.	•	
deficie:st squares problem. The solution of this	2.56 BC	Thanks p	rob I	=	05	TT T	o uc	=======================================			
losst s.	as prot	as problem 's investigated. These results are	į	stiga	red.	These	9 7 6	sul te	. P.		
then apply to the system of differential equations		s syste	10 E	916	arent	17	emba	Hons			
(Author)											

(U) \*LEAST SQUARES METHOD, LINEAR SYSTEMS, FERENTIAL EQUATIONS, SOLUTIONS(GENERAL), DESCRIPTOR REPRINTS

PEB1102F ĵ I DENTIFIER

re Reliability s.

PERSONAL AUTHORS: Shier, D. R. ; Spragins, J. D.

AF05R-84-0154 CONTRACT NO.

2304 PROJECT NO.

TASK NO.

AF0SR TR-86-0341 MONITOR:

## UNCLASSIFIED REPORT

SUPPLEMENTARY MOTE: Pub. in IEEE Proceedings INFOCOM '85, p200-205, 26-28 Mar 85,

ABSTRACT: (U) Previous papers by one of the authors have presented both an exact, but computationally slow, method for computing the reliability of telecommunication retworks with dependent fallures and a much faster approximation to this method. Both methods are based on using parameters that cupture the statistical dependencies and that are intuitive and reasonably easy to measure. This paper extends such previous work by giving a considerably more efficient approach to the calculations for the exact case plus a new series of approximations which converge to the exact solution. (Author) ABSTRACT:

DESCRIPTORS: (U) \*TELECOMMUNICATIONS, \*COMMUNICATIONS NETWORKS, \*RELIABILITY, APPROXIMATION(MATHEMATICS), MODELS, REPRINTS

Exact Solutions, PEB1102F IDENTIFIERS: (U)

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# DITIC REPORT BIBLIDGRAPHY SEARCH CONTROL NO. EVN34M

CARNEGIE-MELLON LINIV PITTSBURGH PA DEPT O ENGINEERING
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BROV: 341V PROVIDENCE RI LEFSCHETZ CENTER FOR DYNAMICAL SYST
<b>^1</b> ₹ ,
BROW.

OF MECHANICAL

(U) Lighting Behavior of Linearly Damped Hyperbolic Es attons,

CA MAD

Hale, Jack K.; Stavrakak IS, Nicholas; PERSONAL AUTHORS:

9-98-SQ27 REPORT NO.

DAAG-29-83-K-0029, AFUSR-84-0378 CONTRACT NO

2304 PROJECT &

7 TASK NO

TR-86-0373 AFOSR **MONITOR** 

# UNCLASSIFIED REPORT

SUPPLEM: : ARY NOTE: Sponsored in part by Grant NSF-DMS85-

bounds: domain in R sub n, it is shown that there is a compact attractor in H ist power. It to the 2nd power as well as in (H to the 2nd power intersection H sub 0 to the ist souer) x H sub 0 to the ist power. Similar result, are given for the linearly damped beam equation. ABSTRACT

(U) \*LIMEAR DIFFERENTIAL EQUATIONS, \*MAVE S. DAMPING, BANACH SPACE, OPERATORS(MATHEMATICS), EQUAT: THEORY DESCRIPT

\*Hyperbolic differential equations, offions, Compact attractors, SMathematics), PEB1102F IDENTIFI: .5 Deta e Semigr

#### (U) Large Eddy Structures in Transitional and Turbulent DESCRIPTIVE NOTE: Final rept. 1 Jul 82-36 Jun 85, Chigier, Norman ; AF05R-82-0266 PERSONAL AUTHORS:

CONTRACT NO. PROJECT NO.

AUG 85

# UNCLASSIFIED REPORT

TR-86-0499

AFOSR **A**2

TASK NO. MONITOR:

Mapping of the signal receals that the inner flame boundary moves radially outward in the near flow-field (x/ Meanwhile, the outer flame boundary grous steadily with downstream (axia) distance, indicating a consistently widening reaction zone, for the entire area examined (x/bidening reaction zone, for the entire area examined (x/bidening reaction zone, for the entire area examined (x/bidening reaction zone) flame outlies of ion current were correlated with flame boundary locations. A double peak pattern was found in the RMS profiles, each peak coinciding with the large gradients of the mean ion current profiles. Mar the inner flame boundary, the flame front fluctuaries across the probe's sampling volume, D\*10 to x/D\*40) and later converges toward the flame axis. In the central flame region, the probe experiences a more flame boundary is approached, an increase in fluctuations generating largely fluctuating components of ion current. transitional and turbulent jet diffusion flames was carried out with emphasis on the derivation of time-dependent information from measurement of various fluctuating quantities in these flames. Special effects were made to control carefully, and vary systematically, the initial and boundary conditions of each flame. causes the mean ion current signal to remain high while the RMS signal drops off rather rapidly. As the cuter continuous flame presence and less fluctuations. This ABSTRACT:

AD-A170 15.1

# SEARCH CONTROL NO. EVN34M DIIC REPORT BIBLIOGRAPHY

AD-A170 145 CONTINUED AD-A170 15

Processes. FFUSION, MAPPING, BOUN JARIES, TRANSITIONS, JW, JET MIXING FLOW, A'R FLOW, ATTACHMENT, ZATION, IONIC CURRENT, POWER SPECIRA, FAST FORMS, LASER ANEMOMETERS, DOPPLER SYSTEMS, HE DEPENDENCE, METHANE, PROPANE +JET FLAMES, EDCIES(FLUID MECHANICS) again t DESCRIPT **TURBUL** FOURTE SAMPLI TURBUL. LOW V

place.

36 MAY DENTIFIE

PERSONAL AUTHORS: (U) Jet diffusion flames, Transitional.jet flames.

SOUTH CAROLINA UNIV COLUMBIA DEPT OF STATISTICS

(U) Regenerative Sampling and Monotonic Branching

DESCRIPTIVE NOTE: Technical rept.,

Durham, Stephen D., ;Yu, Kal F.;

TR-118 REPORT NO.

AF0SR-84-0156 CONTRACT NO.

2304 PROJECT NO.

¥2 TASK NO. AFOSR TR-88-0429 MCN110R:

### UNCLASSIFIED REFORT

STRACT: (U) A regenerative sampling plan is proposed for the sequential comparison of two populations having positive integral response. It is designed to be both an extension and an improvement of the play-the-vinner rules for binary trials in the sense that a much wider variety of responses is allowed, the fraction of inferior the fraction of inferior selections and for a maximum likelihood estimator of the mean response. A conditional test of hypothesis is given for the binary case. (Author) selections approaches zero, and th play-the-winner rule is contained as a special cas. Almost sure convergence and moment convergence in the pth order is studied for ABSTRACT: (U)

SCRIPTORS: (U) \*STATISTICAL SAMPLES, POPULATION(MATHEMATICS), SELECTION, RANDOM VARIABLES, ESTIMATES, INTEGRALS, COMPARISON DESCRIPTORS: (U)

(U) Play the winner rule, PEB1102F, WUAFOSR2304A5 IDENTIFIERS:

UNCLASSIFIED

# SEARCH CONTROL NO. EVN34N DIIC REPURT BIBLIDGRAPHY

VIRGINIA UNIV CHARLOTTESVILLE DEPT OF MATERIALS SCIENCE

9/1

(U) The Use of Novel Processing Procedures for Improving Oversil Fatigue Resistance of High Strangth Aluminum

DESCRIPTIVE NOTE: Annual rept. 1 Jan-31 Dec 85,

Alloys.

PERSONAL AUTHURS: Starke, Edgar A. , Jr;

APR 86

UVA/525644/MS86/101 AF0SR-83-0061

AD-A170 138 AD-A170 144

KARYLANG BALTIMORE COUNTY BALTIMORE DEPT OF

MATHEMAT

(U) The his Version of the Finite Element Method with

Quasi ... form Meshas. DESCRIPTIVE MOTE:

Summary rept.,

MAY 60

PERSONAL A: "HORS: Babuska, Ivo ; Surt, Mant?

MRR-88-1 REPORT NO

AFDSR-88-0322, NSF-DMS83-15216 CONTRACT No.

2304 PROJECT NO

ęγ TASK NO.

AF USR DNI TOR:

TR 88-0362

# UNCLASSIFIED REPORT

NATIONAL (U) The classical error estimates for the hversion of the finite element method are extended for the h-p very or The estimates are expressed as explicit function of h and p are shown to be optimal. The estimate, are given for the case where the solution  $\alpha$  (H sub k > 1 the case when  $\alpha$  has singularities at the corners of the domain. (Author) **ESTRACT** 

SCRIPT(\*\*) (U) \*FINITE ELEMENT ANALYSIS, \*ESTIMATES, ERROR \*\*\*\* YSIS, MESH, OPTIMIZATION, CONVERGENCE, POLYGONS, POLYMCY, ALS DESCRIPTO

PE81:02F, WUAF0SR2304A3 DENTIFIES (U)

# UNCLASSIFIED REPORT

AF0SR TR-86-0492

MONITOR: TASK NO.

2306

PROJECT NO.

CONTRACT NO.

REPORT NO.

7

initiation and propagation of cracks in metals in order to optimize the microstructure of high strength aluminum alloys for overall fracture resistance. The research conducted during this year was divided into three tasks. Task I was concerned with the effects of slip character and grain size on the intrinsic material and extrinsic closure contributions to fatigue crack growth resistance of 7475. It involved the use of thermoschanical processing to modify the grain structure for enhancement of both intrinsic and extrinsic effects. In our last report we described the use of a direct current potential and Al-Li-Cu-Mg alloys. Many recent studies of this glass drop technique (DC-PD) to examine the possibility of crack tip welding in vacuum and the results of our initial experiments using this method. Task II was concerned with a study of the fatigue crack growth and fracture mechanisms of an AI-Li-Cu alloy. Task III was concerned with secondary cracking in AI-Li-Cu. AI-Li-Mg of alloys have shown that they can exhibit severe grain manifestation of this cracking is the appearance of understanding of the mechanisms involved in the boundary cracking. The most commonly-observed Its objective is to develop an

AD-A170 138

AD-A170 114

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6 PAGE

# SEARCH CONTROL NO. EVN34M DTIC REPORT BIBLIOGRAPHY

CONTINUED M-A170 138 wacks on fracture surfaces of tensile waded parallel to the rolling direction. **specimens secondary** 

TINUM ALLOYS FRACTURE (MECHANICS), RESISTANCE, VICS), THEF ADMECHANICS, \*GRAIN TALLURGY), TRAIN SIZE, GROWTH (GENERAL), C.S. COPPER & LOYS, TOUGHNESS, MAGNESIUM \*CRACK PROPAGATION, \*HIGH STRENGTH 5 ALLOYS. . FATIQUE LITHIUM A. DESCRIPTORS STRUCTUR ALLOYS

PEGI10 IF, WUAFOSR2308A1 5 IDENTIFIERS

20/2 AD-A170 128

14/2

CITY COLL NEW YORK ULTRAFAST SPECTROSCOPY AND LASER LAB

(U) Picosacond and Femtosacond Spectroscopic Instrumentation for Ultrafast Spectroscopy and Lasers.

DESCRIPTIVE NOTE: Final rept. 14 Dec 84-31 Dec 85

MAR 86

Alfano, Robert R. PERSONAL AUTHORS:

AF0SR-85-0055 CONTRACT NO.

2917 PROJECT NO.

Ş TASK NO. AF0SR TR-88-0498 HONITOR:

## UNCLASSIFIED REPORT

and alloys. A multichannel Raman spectroscopic system was installed for use in the study of transient Raman affect in semiconductors and shock wave induced processes. An ultrafast streak camera was acquired for photoluminescence kinetic studies in semiconductor alloys STRACT: (U) The Institute has acquired state-of-the-art ultrafast lasers and diagnostic instrumentation to upgrade its facilities and capabilities. A femtosecond mode locked CPM dye laser - dye amplifier system was substantially improved by the addition of new YAG laser pump. This femiosecond system will be used in the study of ultrafast processes in semiconductor microstructures and microstructures with a time resolution of 2 ps. ABSTRACT: (U)

\*MODE LOCKED LASERS, \*LASER PUMPING, \*DYE LASERS, YAG LASERS, LABORATURY EQUIPMENT, LASER AMPLIFIERS, OPTICAL DETECTORS, MULTICHANNEL, PULSED LACERS, STREAK CAMERAS, TIME STUDIES, RAMAN SPECTRA DESCRIPTORS:

DENTIFIERS: (U) Femtosecond time, Ultrafast spectroscopy, Picosecond time, PE81102F, WUAFOSR2817A3 IDENTIFIERS: (U)

SEARCH CONTROL NO. EVN34M DITIC REPORT BIBLIDGRAPHY

9/10 AD-A170 125

PURDUE UNIV LAFAVETTE IN EEG SIGNAL PROCESSING LAB

Datection, Estimation, and Multidimensional Processing of String Evoked Potentials.

DESCRIFTUR FOTE: Final rept. 1 May 83-30 Apr 85

1479 SEP 85 á PERSONAL AUTHURS: Aumon, d. I., INCRETTON, C.

F48820-83-K-0031 CONTRACT NO

2313 PROJECT NO

4 TASK NO.

- 86-0387 .. F O SR MONITOR:

# UNCLASSIFIED REPORT

STRACT: U) A new method of generating and selecting features or computer classification of ERP waveforms is describe. The technique employs features that are time samples or measured ERP waveforms that have been bandpass comparis.  $\land$  of perform, now of a quadratic classifier with optimum fusture selection is made with one using (suboptimus) forward segmented feature selection. Details of the diviginand performance are presented for an optimum it of varying filter for estimating ERP waveforms. filtered An improvement of more conventional techniques is shown with both simulated and measured data. A Results for both simulated and measured data and Some preliminary studies of artifact accepts inputs from multiple electrodes and an estimate for the waveform at a single generation in ERP waveforms are described generates 12 22 • Jectro ABSTRACT: are pre

(U) \*SIGNAL PROCESSING, \*ESTIMATES, COGNITION, BANDPASS FILTERS, PHALOGRAPHY, DETECTION ELECTRU DESCRIPTU

(U) Feature selection, Multidimensional ERP(Event Related Potentials), Evoked PEB1102F, WUAFOSR2313A4

AD-A170 125

12/1 AD-A170 122 FLORIDA STATE UNIV TALLAMASSEE DEPT OF STATISTICS

(U) Bayesian Norparametric Estimation of the Median. Part 1, Computation of the Estimates.

9

Dorse, Hand : PERSONAL AUTHORS: CONTRACT NO. F49820-85-C-0007

2304 PROJECT NO.

2 TASK NO. AF0SR TR-88-0408 MONITOR:

# UNCLASSIFIED REPORT

Pub. In The Arnals of Statistics, v13 SUPPLEMENTARY NOTE: n4 p1432-1444 '985.

approximately F sub theta where F sub theta(x) = F(x-approximately F sub theta where F sub theta(x) = F(x-that a) ABSTRACT:

\*NONPARAMETRIC STATISTICS, \*ESTIMATES, COMPUTATIONS, BAYES THEOREM, REPRINTS DESCRIPTORS: (U)

•Medium(Statistics), PE61102F, IDENTIFIERS: (U) WUAFOSR2304A5

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# SEARCH CONTROL NO. EVN34M DIIC REPORT BIBLIDGRAPHY

12/1 AD-A170 115 MISSOURI : : V-ROLLA DEPT OF MATHEMATICS AND STATISTICS

Statistical Analysis of a Compound Exponential Failure Mode 1

**18** 9

PERSONAL AUTHUS: EngelHandt, Max ; Bain, Lee J. ;

AF05R-84-0164 CONTRACT NO

7304

PROJECT NO

TASK NO.

ad-0378 HONI TOR:

# UNCLASSIFIED REPORT

PPEEMENTA: ADTE: Pub, in Jnl. of Statistical Computation and Simulation, v23 p288-315 1986. SUPPLEMENTA: M.)TE:

a two parameter compound exponential failure computational aspects of estimating both 1 small-sample means and variances are is of hypotheses on each parameter with the the construction of confidence limits are This paper discusses the statistical parameters of the method of maximum likelihood are ier an unknown milsance parameter ara . Author) discussed enalysis c derived. 1 other per. model. So di scussed provided, ABSTRACT:

(U) \*PARAMETRIC ANALYSIS, \*EXPONENTIAL \*::<IMUM LIKELIHOOD ESTIMATION, MATHEMATICAL UIATIONS, CONFIDENCE LIMITS, REPRINTS FUNCTIONS MODELS, C. DESCRIPTORS

(U) WUAFOSR2304A5, PEB1102F IDENTIFIERS:

12/1 AD-A170 112

ARIZONA UNIV TUCSON DEPT OF MATHEMATICS

(U) Stochastic Convexity and Its Applications.

DESCRIPTIVE NOTE: Technical rept.,

DEC 85

PERSONAL AUTHORS: Shaked, Moshe ; Shanthikumar, J. G. ;

CONTRACT ND. AFOSR-84-0205

2304 PROJECT NO.

TASK NO.

AF0SR TR-88-0345 MONITOR:

# UNCLASSIFIED REPORT

arrival and service rates in a GI/G/1 queue, is established. Also the convexity of the queue length in the M/M/c case as a function of the arrival rate is shown, concavity (convexity) of the empirical distribution function is established. And, for applications in the theory of probability inequalities, we identify several families of distributions which are convexly parametrized. obtained and used to find an optimal repair probability. Also the convexity of the damage as a function of time in thus strengthening previous results while simplifying their derivation. In reliability theory, the convexity of the payoff on the success rate of an imperfect repair is and concavity and their properties are studied in this paper. Efficient sample path approaches are developed in order to verify the occurrence of these notions in various applications. Numerous examples are given. The use of these notions in several areas of probability and statistics is demonstrated. In queueing theory, the convexity (as a function of c) of the steady state mean function of a parameter of the offspring distribution is proved. In nonparametric statistics, the stochastic waiting time in a GI/D/c queue, and as a function of the a cumulative damage shock model is shown. In branching Several notions of stochastic convexity processes, the convexity of the population size as a Ξ ABSTRACT:

\*STOCHASTIC PROCESSES, ARRIVAL DESCRIPTORS: (U)

A9-4170 112

# DIIC REPURT BIBLIOGRAPHY SEARCH CONTROL NO. EVN34M

AD-A170 112 CONTINUED

DISTRIF TOW FUNCTIONS, INEQUALITIES, MEAN, NOMPARAMETRIC STATIS: S. OPTIMIZATION, PROBABILITY, OUEDEING THEORY, RATES. .. IABILITY, REPAIR, SIZES(DIMENSIONS), STEADY STATE, SECRY, TIME DEPENDENCE, POPULATION(MATHEMATICS)

IDENTIFIE S. (U) \*Convexity, Concavity, WUAFOSR2304AS, PEB11026

AD-A170 111 9/2

TEXAS UNIV AT AUSTIN DEPT OF COMPUTER SCIENCES

(U) Dynamic, Distributed Resource Configuration on SW-Banyans.

DESCRIPTIVE NOTE: Final rept. 1 Feb 84-31 Jan 85,

2

PERSONAL AUTHORS: Fee, John ; Jenevein, Roy ; Browne, J. C.

CONTRACT NO. F49620-84-C-0020

PROJECT NO. 2304

MONITOR AEGER

TASK NO.

MONITOR: AFOSR TR-88-0462

# UNCLASSIFIED REPORT

SUPPLEMENTARY MOTE: Pub. IN IEEE, p288-273 1985.

ABSTRACT: (U) A distributed, Log N algorithm to configure computer resources interconnected by regular SW-banyans into logical SISD machines is presented. The algorithm is written for a general, dynamic computing environment in which requests for resources and the release of allocated resources occur spontaneously. A request is always satisfied assuming it is physically possible to do so. The circuit built is the cheapest connectivity.

DESCRIPTORS: (U) \*CONFIGURATIONS, \*COMPUTER ARCHITECTURE, ALGORITHMS, DISTRIBUTION, ENVIRONMENTS, NETWORKS, RESOURCES, MULTIPROCESSORS, REPRINTS

IDENTIFIERS: (U) \*Banyans, WUAFDSR2304A3, PEB1102F

# DTIC REPORT BIBLIDGRAPHY. SEARCH CONTROL NO. EVN34M

AD-A170 109 12/1 AD-A170 110

GEORGIA I . I OF TECH ATLANTA

FLORIDA STATE UNIV TALLAHASSEE DEPT OF STATISTICS

12/1

(U) Stationary Markov Sets. (U) Optim: (die and Inspection Periods for M/G/1 Queues, 200

Technical rept.. DESCRIPTIVE NOTE:

APR 80

K.RS: Kim, Sung S.; Serfozo, Richard F. PERSONAL AL

PERSONAL AUTHORS: Taksar, Michael I.;

AF05R-84-0367 2304 CONTRACT NO PROJECT NO

FSU-STATISTICS-M708, TR-88-187-AF0SR REPORT NO.

F49520-85-C-0007

CONTRACT NO.

TASK NO. HONITOR: £3-0382

2304 PROJECT NO.

TA-88-0368 AFOSR MONITOR:

# UNCLASSIFIED KEPORT

under a  $(7/\epsilon)$  policy; whenever the system becomes empty, the serve: is idle for a time I and then it inspects the

We consider an M/G/1 queue that operates

ABSTRACT:

UNCLASSIFIED REPORT

.ously without serving customers until there

queue cor...

activated until the service c

rs waiting - thereupon the server is service and serves customers continuously stem becomes empty. This idle-inspectionals repeated indefinitely. There are costs

of the queue, activating and running the

of procedure for determining the design (T.N.) that minimizes the average cost.

parameter s

DESCRIPTORS

computation

for inspe Berver. .

line whose 'future' shape is conditionally independent of the 'past' shape given 'present'. Such sats appear in the study of visiting times of special Markov (but not strong Markov) processes. If the Markov process is stationary then the corresponding set is also stationary, that is, its distribution does not depend on the choice of the origin on the real line. In this paper we will describe all closed stationary Markov sets. We will show that each stationary Markov which is not regenerative can be taing a mixture of these regenerative sets or taking a 'Superposition' of two regenerative sets. Superposition can be described loosely as cuttingtwo real lines R1 and R2 with two sets M1 and M2 in them, into pieces of fid length and then combine them into one line alternating pieces from R1 and R2. The union of the cut offs from M1 and M2 will be the superposition of the sets M1 and M2. constructed from two special regenerative sets by either A Markov set is a random set on a real 3 ABSTRACT: colding customers in the system. We present a

WUAF0SR2304A5, PEB1102F <u>.</u>

+QUEUEING THEORY, COMPUTATIONS, COSTS,

POLICY, PARRETERS, NUMERICAL METHODS AND PROCEDURES

IDENTIFIERS.

\*MARKOV PROCESSES, \*SET THEORY REGENERATION(ENGINEERING), MATHEMATICAL FILTERS, MAPPING(TRANSFORMATIONS), REPRINTS 3 DESCRIPTORS:

PEB1102F 3 IDENTIFIERS:

AD-A170 110

40 - A 170 109

88 PAGE

SEARCH CONTROL NO. EVN34M DIIC REPURT BIBLIDGRAPHY

14/1 AD-A170 101

FLORIDA STATE UNIV TALLAHASSEE DEPT OF STATISTICS

(U) Testin whether F is 'More NBU (New Betler Than Used)' Then .. of

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Hollendor, Myles ; Park, Dong H. ; Proschan, PERSONAL ALTICIPS: Frank :

F49820-85-C-0007 CONTRACT NO

2304 PROJECT NO

TASK NO.

MONITOR:

14 38-0384

# UNCLASSIFIED REPORT

Pub. In Microelectronic Reliability, 44 1986. SUPPLEMENTA . NOTE: v28 n1 p...

whether consistent distribution possess more of the new better to used (NBU) property than does a second life distributon We also extend the test to compare more than two the distributions as to their degree of NBU-This paper develops a test to decide ABSTRACT:

SCRIPTORS (U) \*LIFE TESTS, \*STATISTICAL ANALYSIS, PROBABILIST DISTRIBUTION FUNCTIONS, ASYMPTOTIC SERIES, MAINTENA, COST ANALYSIS, RELIABILITY, REPRINTS DESCRIPTORS

NBU(New Botter Than Used) 105, PEB1102F WUAFOSEK.

8/3 AD-A170 099

ARIZONA UNIV TUCSON CEPT OF MATHEMATICS

A General Software Availability/Reliability Model: Numerical Exploration via the Matrix Laguerre Transform.

DESCRIPTIVE NOTE: Technical rept.,

DEC 84

Masuda, Yasushi ; Shanthikumar, J. G. PERSONAL AUTHORS: Sumita, Ushio;

AF0SR-84-0208, NSF-ECS84-04071 CONTRACT NO.

2304 PROJECT NO.

TASK NO.

TR-88-0402 AFOSR MONITOR:

## UNCLASSIFIED REPORT

ISTRACT: (U) In this paper, a new software availability/reliability model is developed where lifetimes and repair times have general system-state-dependent distributions. Multiple errors may be introduced or removed through repairs. The model is formulated as a multivariate Markov Using the matrix Leguerre transform of Sumita (1984), corresponding computational procedures are also developed. A numerical example is given, demonstrating speed, accuracy and stability of these procedures. (Author) reliability of the software system at time t are derived. assumption prevalent in the literature is totally eliminated. Expressions of various performance measures process and contains many other wodels appeared in the of practical interest combining availability and literatures as special cases. The exponentiality ABSTRACT:

\*COMPUTER PROGRAM RELIABILITY, REPAIR AVAILABILITY, MULTIVARIATE ANALYSIS, MARKOV PROCESSES, LAGUERRE FUNCTIONS, TRANSFORMATIONS(MATHEMATICS) 9 DESCRIPTORS:

WUAF0SR2304A5, PEB1102F ŝ · IDENTIFIERS:

AD-A170 099

EVN34M 83 PAGE

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# SEARCH CONTROL NO. EVN34M DIIC REPORT BIBLIDGRAPHY

TEXAS UNIV AT AUSTIN DEPT OF COMPUTER SCIENCES AD-A170 087

TRAC (Taxe Pacunfigurable Array Computer): An Experience with a Novel Architectural Prototype (U) TRAC (Taxe

Final rept. 1 Feb 84-31 Jan 85 DESCRIPTIVE NOTE.

Z. Deshpande, S. R.; Janeveln, R. PERSONAL AUTHORS Lipovski, G. C

F43320-84-C-0020 CONTRACT NO.

ROVECT NO.

ç I ASK NO. MONITOR:

### UNCLASSIFIED REPORT

Pub. In National Computer Conference .. <u>..</u> SUPPLEMENTALY ! P247-258 1985

are reviewed. Various test and debugging carring the implementation phase are y now that TRAC is operational, overall aspects of the design decision are This paper presents a self-assessment of figurable Array Computer (TRAC) Project. Stations and implementation schemes are staff is focused on elements such as ory design, along with the structure of tion networks. Communication issues but vs. packet switching and system summarized, (...thor) tools employ covered. Fire positive and the Texas Re Architectural examined, and processor-to synchronizat: the intercononcerning c ABSYRACT:

AMALYSIS, PF ...TYPES, DEBUGGING(COMPUTERS), CIRCUIT INTERCOMNECTI...S, REPRINTS SYSIEMS COMPUTER ARCHITECTURE CESCRIPTORS:

TRACITOXES Reconfigurable Array Computer), WirfOSR2304A3, PEB1102F IDENTIFIERS:

7/3 AD-A170 095

ADRIES TEXAS STATE UNIV DENTON DEPT OF CHEMISTRY

(U) Structure of 6.6,10,10-Tetranitropentacyclo(6.3.0.0 superscript 2,5.0 superscript 3,8.0 superscript 4,8) decare, CIOH8N408,

2

chand, Alan RSONAL AUTHORS: George, Clifford; Gillard: Richard; Flippen-Anderson, Judith L.; Choi, Chang S "chand, L PERSONAL AUTHORS:

AF0SR-84-0085 CONTRACT NO.

2300 PROJECT NO.

TASK NO.

TR-88-0368 AFOSR MONITOR:

## UNCLASSIFIED REPORT

JPPLEMENTARY NJTE; Pub. in Acta Crystallographica, Section C, vC41 p788-791 1985. SUPPLEMENTARY NUTE:

structure and synthasis of a trinitrobishomocubane have been reported previously. The structure of this compound was investigated as part of a continuing study of the structural parameters of energetic substituents in polycyclic nitro compounds. The structural parameters provide a basis to evaluate and modify the semi-empirical parameters used for computational modelling of proposed tetranitrobishomocubane (TNBHC), was prepared as part of a program to synthesize strained energetic compounds. The The title compound, a bu, not yet synthesized compounds ABSTRACT:

DESCRIPTORS: (U) +CRYSTAL STRUCTURE, +DECANES, +POLYCYCLIC COMPOUNDS, +NITRO RADICALS, EMERGETIC PROPERTIES, CRYSTAL LATIICES, REFLECTION, THERMAL PROPERTIES (U) Cubanes, Cubane/tetranitrobishomo, X ray crystallography, PEG1102F IDENTIFIERS:

13-1170 097

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EVNOAK SEARCH CONTROL NO. DITC REPORT BIBLIOGRAPHY

(U) A fast amaphical Goodness of Fit Test for Time Serius

Technical rept.,

DESCRIPTIVE TOTE:

MOCIE 15

Kedem, Benjamin

PERSONAL AUTORS:

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x0-85-38-8K, TR85-32

AF05R-82-0187

CONTRACT NO

REPORT NO.

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DEPT OF MATHEMATICS

MARYLAND 1 : V COLLEGE PARK

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AD-A170 094

12/1 AD-A170 082

ILLINDIS LNIV AT CHICAGO CIRCLE DEPT OF MATHEMATICS STATISTICS AND COMPUTER SCIENCE

(U) A Family of Locally Resistant Monsymmetric Bib Designs of Degree k.

DESCRIPTIVE MOTE: Interim rept.

<u>-</u> FEB 86 PERSONAL AUTHORS: Hedayat, A.; Ohmorf, H.

RR-88-01 REPORT NO. AF0SR-88-0320 CONTRACT NO.

2304 PROJECT NO.

**A**5 TASK NO.

TR-88-040B AF05R MONITOR:

# UNCLASSIFIED REPORT

BSTRACT: (U) The existence of a symmetric BIB(4t+3, 2t+1, t) design implies the existence of a locally resistant BIB(4t+4, 8t+6, 4t+3, 2t+2, 2t+1) design of degree 2t+2. There are infinite rumber of such designs of used useful for rumning experiment urder hostilp circumstances where there are good chance of losing one or wore observations. Such designs will preserve the statistical optimality of the data. Other theoretical results are also given. (Author) ABSTRACT:

DESCRIPTORS: (U) \*EXPERIMENTAL DESIGN, SYMMETLY, STATISTICAL DATA, OPTIMIZATION, MATRICES(MATHEMATICS)

JENTIFIERS: (U) BIB(Balanced Incomplete Block), PEB1102F, WUAF0SR2304A5 IDENTIFIERS:

UNCLASSIFIED REPORT

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MONITOR: TASE NO.

the oscillatory appearance of stationary in the oscillatory appearance of stationary in the section very economically by only a few or crossings which in addition contain a great spectral content of the process. A useful spectral content of the process. A useful with the variances of higher order crossings and is applied in construction of the applied in construction of the process of the higher order from this, a graphical display of higher order from this, a graphical display of higher order section with their probability limits provide section of this device. (Author) time ser! approximits discu probabil Internation crossing CLOSSIDE a fast o deal of ABSTRACT:

(U) \*FITTING FUNCTIONS(MATHEMATICS), \*TIME YSIS, STATIONARY, APPROXIMATION(MATHEMATICS), (\_\_MATHEMATICAL\_MODELS) PROBAB11 DESCRIPTOR SERIES A

applicab.

(U) \*Goodness of fit tests, Higher order PEB1102f, WIAFDSR2304AS crossing. COENTIFIERS

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# SEARCH CONTROL NO. EVN34M DITC REPURE BIBLIOGRAPHY

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	CALIFORNIA UNIV RIVERSIDE DEPT OF STATISTICS	(U) Influential Nonegligible Parameters under the Search
	RIVERSIDE	negligible
AD-A170 079 12/1	CALIFORNIA UNIV	(U) Influential No
	CIRCLE DEPT OF MATHEMATICS	
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12/1	ILLINUT STO AT CHICAGO	
AD-A170 Cas	ILLINU: STATISI.	:

(U) Opti. I Allocation of Multistate Components. DESCRIPTIVE NUTE: Technical rept.,

Interim rept.

Linear Model. DESCRIPTIVE NOTE: PERSONAL AUTHORS: Ghosh, Subir, CONTRACT NO. AFOSR-88-0048

APR 86

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PROJECT NO.

A.RS: El-Neweihi, Emad ; Proschan, Frank ; PERSONAL

Jayaram ; Sethura

SEP 85

AF0SR-80-0170 2304 PROJECT NO CONTRACT ,

18 -85 -4

REPORT NO

85 4 MONITOR TASK NO.

88-0424

# UNCLASSIFIED REPORT

This paper presents some results in the	Optimal a Coration of multistate components to k series	that some performance characteristic like		**		atical tools are majoritation and Schur		s in reliability theory.
ABSTRACT:	optime	Systems	expecte	higher.	function	basic r	function	app I tos

(U) \*RELIABILITY, \*OPTIMIZATION. \*MATHEX DESCRIPTO

(U) Schur functions, Majorization, PEB1102F 145 I DENT I FIE MUAFOSE

# UNCLASSIFIED REPORT

TR-88-0438

AFOSR A5

MONITOR: TASK NO.

ABSTRACT: (U) In this paper some results useful in detecting the Influential Nonegligible parameters under the search linear model are presented. An estimator of the number of nonregligible parameters which are significant and influential is also given. Keywords: factorial experiments; residuals. (Author)

DESCRIPTORS: (U) \*PARAMETRIC ANALYSIS, \*FACTORIAL DESIGN, ESTIMATES, MATHEMATICAL MODELS, LINEARITY, RESIDUALS

IDENTIFIERS: (U) PEB1102F, WUAFOSR2304A5

# SEARCH CONTROL NO. EVN34M DITIC REPURT BIBLIDGRAPHY

AD-A170 . 8 12/1	AD-A170 072 8/13	8/11 20/1.
PITTSB 44 UNIV PA CENTER FOR MULTIVARIATE ANALYSIS	APPLIED RESEARCH ASSOCIATES INC ALBUQUERQUE NM	TES INC ALBUQUERQUE NM
(U) On wally Consistent Estimates of Regression Coe ents when the Errors are not Independently and locately Distributed.	(U) Computational Aspects Constitutive Model.	(U) Computational Aspects of the ARA Three Invariant Constitutive Model.

134P MAY 86

PERSONAL A THORS: Mu, YUSHUB ;

MAR 18

TR-86-06

REPORT N.

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F49320-85-C-0008

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PROJECT P.

Dass, Milliam C. ; Merkle, Douglas H. ; PERSONAL AUTHORS:

DESCRIPTIVE NOTE: Final rept. 1 Aug 84-31 Jul 85

> 5934 REPORT NO.

F49820-84-C-0068 CONTRACT NO.

PROJECT NO.

5 TASK NO. AF0SR TR-88-0483 MONI TOR:

UNCLASSIFIED REPORT

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MONITOR: TASK NO.

# UNCLASSIFIED REPORT

ABSTRACT: (U) The three invariant elastoplastic constitutive model has been implemented for use in tinite difference blast and shock calculations. The model employs two yield surfaces with an independent plastic potential to control shear induced dilatancy. The model is conceptually similar to Lode's cohesionlass soil model sconceptually similar to Lode's cohesionlass soil model incorporated during the course of implementation incorporated during the course of implementation of work softening, and a high pressure-tamperature equation of softening, and a high pressure-tamperature equation of state. Strain subcycling has been used to prevent violation of the consistency condition. Results are given for planar, spherical, and cylindrical one dimensional blacks calculations employed a newly developed interface between the Soil Element Model (SEM) subroutines and STEAITH 20. This approach allows the SEM to act continue codes. Overall, the new coststitutive models of the continue codes. Overall, the new coststitutive model is physically realistic, somewhat expensive to run, and promising for future application. Steps which remain estimation of the regression coefficients when are not distributed identically and thy and are of nonzero mean. The estimates this paper are shown to be strongly

(U) \*ESTTMATES \*NUMERICAL METHODS AND \*COEFFICIENTS, DISTRIBUTION, LINEAU MALYSIS, MATHEMATICAL MODELS, CHEBYSHEV MS. CORRELATION ERRORS, CONSISTENCY WUAFUSR2304A5, PEB1102F

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# SEARCH CONTROL NO. EVN34M DIIC REPURI BIBLIDGRAPHY

AG-A170 072	TIMUED
to make the	of more useful in practice include
parameter se	livity studies to help dynamic insitu
behavior pro	tion, improved algoritims for aliminating
rumerical e	a. a rezoning procedure, and more two
dimensional	

\*SOIL MECHANICS, \*SOIL MODELS, \*SEISMIC NATION, BLAST WAVES, SHOCK WAVES, FINITE T. TENSILE STRENGTH, FAILURE (MECHANICS), ALGORITHMS, ALLUVIUM WAVES, WAVE TWO DIMENSIC CESCRIPTORS:

SEM(Soil Element Model), PESI102F, WUAF05R2307.1 IDENTIFIERS:

20/4 AD-A170 371

GEORGIA INST OF TECH ATLANTA SCHOOL OF AEROSPACE

ENGINEERING

(U) Evaluation of Data on Simple Turbulent Reacting Flows

DESCRIPTIVE NOTE: Interim scientific rept. 1 Oct 84-30 Sep 85.

478P

5EP 85

Strahle, Warren C. ; Lekoudis, Spyridon G. PERSONAL AUTHORS:

AFI)SR-83-0356 CONTRACT NO.

2308 PROJECT NO.

= TASK NO.

TR-85-0880 AFOSR MONITOR:

# UNCLASSIFIED REPORT

ABSTRACT: (U) A large number of data sets on simple turbulent reacting and non-reacting flows are reviewed with a view toward judgement as to their suitability for computational test. Both premixed and nonpremixed flows are considered, but the review is limited to simple geometries and flows which could be analytically treated as an initial value (parabolic) problem. Nine flows are identified as being suificiently well documented and understood to serve as bases for testing of computational methods and models. The data for these flows are tabulated or graphically displayed in this report. ABSTRACT: (U)

DESCRIPTORS: (U) +TURBULENT FLOW, +COMBUSTION, BOUNDARY LAYER FLOW, SHEAR PROPERTIES, REYNOLDS NUMBER, FLAMES, PRESSURE GRADIENTS, JET FLOW, DATA REDUCTION, TABLES(DATA) , GRAPHS

DENTIFIERS: (U) Initial value problems, Premixed combustion, PE61102F, WUAFOSR2308A1 I DENTIFIERS:

# SEARCH CUNTROL NO. EVN34M DITC REPORT BIBLIOGRAPHY

AD-A170 070 6/18 40-A170 070

NEW YORK PS. CHOPHYSTOLOGY LAB

BERNARD H - BUCH COLL

stological Studies II. Performance and ical Response in Coronary Prone and Ary Prone Individuals. Monco Phys 1. Paych

Type As also had significantly higher skin conductance than Bs. although this was not differentiated according to task. An interesting finding here is that while SC is higher for As than Bs, skin temperature (ST) is also

cognitive as compared to the perceptual-motor one. The

CONTINUED

PSYCHOPHYSIOLOGY, \*PERFORMANCE(HUMAH),

DESCRIPTORS: (U)

higher.

\*RESPONSE(BIOLOGY), \*PERCEPTION, \*MOTOR REACTIONS, \*MEMORY(PSYCHOLOGY), STRESS(PSYCHOLOGY), STRESS(PSYCHOLOGY), STRESS(PHYSIOLOGY), COGNITION, HEART RATE ELECTROWYOGRAPHY, SKIN (ANATOMY), BODY TEMPERATURE, REACTION TIME, TEST METHODS, CORCHARY DISEASE, EXPERIMENTAL DATA, STIMULATION(PHYSIOLOGY),

PE81102F, WUAFOSR2313A4

**ELECTROPHYSIOLOGY** IDENTIFIERS: (U)

\*(IE: Fina rept. 1 Nov 84-31 Oct 85 DESCRIPTIVE

BB NYO

PERSONAL AUTHORS: Andreassi, John L. J. Juszczak, N. Mauro ;

AF0SR-83-0304 CONTRACT NU

2313 PROJECT NO

TASK NO.

£ 58 fr. 88-0401 MONITOR:

## UNCLASSIFIED REPORT

See also AD-A151 018 SUPPLEMENTAR MOTE:

ology Laboratory of Baruch College, City of New York, over the past tuelve months. In 136 individuals, 18 classified as Type A and 3 using the Jerkins Activity Survey, performed wotor task (simulated race car driving) a secondary task (simple ruaction time) while physiological measures were obtained. The This final report details the background, disconclusions of two studies completed in the trials compared to practice trials. Experiment laged in the cognitive task. The As also out THE PROPERTY OF THE PROPERTY AND THE BY PORT OF THE PROPERTY O on in both a perceptual motor and a cognitive e heart rate (HR), electromyogram (EMG) and 188 in the cognitive task in general the different sample of 38 subjects (18 each of state (SI). Analyses of performance results at Type A individuals significantly slowed By in a design which compared the effects of in times (secondary task) when performing ... A RIS were significantly slower in the TAMBOLY ! LASK. Psychophy along with Type A are: Experiment ndicated subjects : only will Derformed attention Short te II tested participa IS as Tyr thair rea cognitive Indings percept qualifyir skin tem - rumber BEASULES. ABSTRACT:

AD-A170 070

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# SLARCH CONTROL NO. EVN34N DIIC REPORT BIBLIOGRAPHY

AD-A170 069 AD-A170 069

GEORGIA S ATE UNIV ATLANTA DEPT OF PHYSICS AND ASTRONOMY sign) Observations by Speckle Interferometry (U) Astro

data applicable to a better understanding of the characteristics of atmospheric turbulence and its effects

CONTINUED

on high resolution imaging.

DESCRIPTORS:

wife: Final rept. 1 Jun 81-28 Feb 88 DESCRIPTIVE

PERSONAL ALLESSE MCAlister, Harold A. .; 24N 86

AF05R-81-0101 CONTRACT NO

remifiers: (U) \*Speckle interferometry, Digital images, PE81102F, WUAFOSR.331181

TOENT IF I ERS:

ESCRIPTORS: (U) \*ASTROWOMY, \*OPTICAL INTERFEROMETERS, \*INTERFEROMETRY, BINARY STARS, PLANETS, INTERSTELLAR SPACE, HIGH RESOLUTION, ASTEROIDS, DWARF STARS, IMAGE PROCESSING, DIFFRACTION ANALYSIS, CHARGE COUPLED DEVICES, DIGITAL SYSTEMS

2311 PROJECT NO

4 TASK NO.

3 88-0475 200 MONITOR:

### UNCLASSIFIED REPORT

Also characterized by enhanced measurement the separation of closely spaced objects seen turbulent atmosphere. The speckle of the stray as the primary imaging detector and autocorrulator as a high speed data reduction orating at video rates. The analysis of the size of the oration of the speckle of the oration of the speckle of the sp us talescope in spite of severe blurring by atmospheric turbulence. With existing large speckle techniques thus permit resolution at ules of 0.025 arcseconds rather than the 1 to 2. the extraction of spatial information from two images at scales down to the diffraction the duplicity of these primordial members of stem, the resolution of suspected structure of active galaxies and quasars; the foun of truly diffraction limited images of a system. The goals of these programs include: astronomical objects; and, the generation of on of planetary mass objects in orbit about it of a widely separated binary star system measurement of submotions in the otherwise aution of binary stars; the observation of Speckle interferometry is a method Paraltt. dimensic **accuracy** question the sola limit of Interfer a handki process as tero in the Introduc telesco Brcsecor the det • Illpti. reconst methods. through ONE COR coup led spetiel process reduced ABSTRACT: through

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# DITC REPORT BIBLIDGRAPHY SEARCH CONTROL NO. EVN34M

AD-A170 Oc., 7/2

ILLINDIS -- 1V AT URBANA DEPT OF ELECTRICAL AND COMPUTER ENGINES -- .

(U) Reservin on a New Type of Negative Hydrogen Ion Source. Synapti

DESCRIPTIVE NOTE: Final rept. 15 Jul 81:14 Jan 85,

PERSONAL ALTHURS: Turnbull, R. J. ;

628

MAY 85

CONTRACT PR. AFOSR-81-0180

PROJECT NO 2301

TASK NO. A7

MONITOR. AFGSR 18-86-0476

# UNCLASSIFIED REPORT

ABSTRACT: (1) The production of negative hydrogen ions in a distance is greatly enhanced if the hydrogen is vibrative. Ally excited hydrogen. In the work presented here is a study of a method of producing vibrationally excited (1, drogen. The technique used is to heat dense hydrogen hot enough to produce vibrational excitation and then all (1, it to expand thus cooling it while maintaining the vibrational excitation. Both theoretical calculations and exp. Henchial results on this technique are presented.

DESCRIPTORS, (U) \*HYDROGEN, \*ANIONS, ION SOURCES, PREPARA' S. EXCITATION, LASERS, HEATING, MOLECULAR VIBRATIS GASES, ELECTRIC ARCS, DISSOCIATION, VACCULM CHAMBERS \*12ZLE GAS FLOW, ELECTRONIC STATES, ENERGY LEVELS, FARRICATION

IDENTIFIES. (U) PEB1102F, WUAFDSR2301A7

AD-A170 065 6/16

BAYLOR COLL OF MEDICINE HOUSTON TX

(U) Amine Neurotransmitter Regulation of Long-Term Synaptic Plasticity in Hippocampus.

DESCRIPTIVE NOTE: Annual rept. 1 Apr 85-31 Mar 88,

APR 86 11

PERSONAL AUTHORS: Johnston, Daniel;

CONTRACT NO. AFOSR-85-0178

PROJECT NO. 2312

TASK NO. 46

MONITOR: AFOSR TR-86-0465

# UNCLASSIFIED REPORT

ASTRACT: (U) The overall grain of the research project is to investigate the mechanisms of long-term synaptic potentiation (LTP) in hippocampus, with particular amphasis on the modulation of LTP by amino the modulation of LTP by amino the modulation of LTP by amino the meurotransmitters. During the first year of the grant, it was shown that LTP of the messy fiber synapse in hippocampus is associated with an increase in the excitatory synaptic conductance with no change in reversal potential or membrane properties of the postsynaptic neuron. It was also shown that no long-term change in the inhibitory synaptic conductance was associated with the previously observed modulation of LTP by nurepinephrine (NE) were tested. It was found that cyclic AMP could minic this action of Me and that NE could enhance LTP in the absence of synaptic inhibition. The callular effects of NE were explored in an isolated hippocampal neuron system in which patch-clamp techniques were utilized. It was found that NE produced an enhancement in the voltage-dependent calcum current. Progress also was made towards the behavior of single hippocampal neurons.

DESCRIPTORS: (U) \*NEUROCHEMICAL TRANSMISSION, \*SYNAPSE, \*HIPPOCAMPUS, AMINES, ADRENAL MEDULLA MORMONES, PLASTIC

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# SEARCH CONTROL NO. EVNJ4M DIIC REPURT BIBLIDGRAPHY

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CYCL IC VE FIBERS, ADENDSIME PHOSPHATES, CYCL E CELLS, CALCIUM, ELECTROPHYSIOLOGY, MALATION PROPERTIES COMPUTERIZ COMPOUNDS

Morepinephrine, AMP(Adenosine Cyclic AMP, LTP(Long Term Synaptic PEBiloua, WUAFOSR231246 Monophosp? Potentiet: DENTIFIERS

CALIFORNIA UNIV SANTA BARBARA DEPT OF ELECTRICAL AND COMPUTER ENGINEERING

20/12

(U) Development of a Planar Metarojunction Bipolar Transistor for Very High Speed Logic.

Annual technical rept. no. 3, 1 Oct 84-DESCRIPTIVE NOTE: 1 Mar 86,

**5**59 MAR 80 PERSONAL AUTHORS: Long.Step/sen I. ;Kroemer,Herbert ;Rao,M. .. ~

AF05R-82-0344 CONTRACT NO.

2305 PROJECT NO.

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TASK NO.

AF0SR TR-88-0487 MONITOR:

## UNCLASSIFIED REPORT

denonstrated. Graded-bandgap nonalloyed obmic contacts using nt InAs and GaAs for the AlgaAs emitter and pt GaSb for the GaAs emitter and pt GaSb for the GaAs base were provided by selective epitaxial regrowth. The MBE growth conditions for grading from GaAs to InAs to GaSb were determined. Low specific contact resistances were observed for both contact types. A AlGaAs/GaAs graded-gap contact HBT was grown. A current gain of 20 was measured with only simple wire probes on The following report describes the results of research on III-V molecular be epitaxial (MBE) growth, material characterization and the fabrication of heterostructure bipolar transsistors (HBI) for very high speed logic applications. During the reporting period work on the InGaP/GaAs heterolunction (Hu) was completed isotype Hus were grown and evaluated by a CV. reconstruction method in order to determine the energy band. offsets. It was found that Ec=0.21 aV and Ev=0.25 aV for the lattice matched composition. A new direction toward improvement in performance and the fabrication techniques for the AiGaAs/GaAs HBT was successfully the base and emitter.

\*BIPOLAR TRANSISTORS, \*HETEROJUNCTIONS, DESCRIPTORS: (U)

AC-2173 083

AD-A170 065

# DITC REPURT BIBLIOGRAPHY SEARCH CONTROL NO. EVN34M

AD-A170 Oc s CONTINUED

\*FABRIC: TON, ÉPITAXIAL GROWTH; MOLECULAR BEAMS, GALLIUM ARSENIO: INDIUM PHOSPHIDES, ALUMINIM GALLIUM ARSENIDE, GALLIUM STIMONIDES

IDENTIFIES: (U) Indvam gallium phosphide, HBT(Hets structure Bipolar Transistors), WUAFSR2305C1, PEG1102F

AD-A170 059 12/1

PITTSBURGH LINIV PA CENTER FOR MULTIVARIATE ANALYSIS

(U) Almost Sura L(1)-Norm Convergence for Data-Based Histogram Density Estimates.

DESCRIPTIVE NOTE: Technical rept.,

MAR 88 17

PERSONAL AUTHORS: Chen, X. R. ; Zhao, L. C.

REFORT NO. TR-88-07

CONTRACT NO. F49820-85-C-0008

PROJECT NO. 2304

TASK NO. A5

MONITOR: AFDSR TR-86-0394

# UNCLASSIFIED REPORT

ABSTRACT: (U) The main result of this paper is summarized in Theorem 1, which states that whon certain conditions of general nature are satisfied, the databased histogram density estimator is strongly consistent in the sense that the mean absolute deviation of the estimator and the density function converges to zero almost surely for any density function, as the sample size increases to infinity. (Author)

DESCRIPTORS: (U) +HISTOGRAMS, \*ESTIMATES, DENSITY, RAWDOM VARIABLES, DISTRIBUTION FUNCTIONS, CONVERGENCE, MULTIVARIATE ANALYSIS

IDENTIFIERS: (U) \*Histograms density eslim, PE61102F, WUAFOSR2304A5

# SEARCH CONTROL NO. EVN34M DIIC REPORT BIBLICGRAPHY

FLORIDA STATE UNIV TALLAHASSEE DEPT OF STATISFICS

(U) Easily Stated but Hard Statistical Problems

Technical rept., DESCRIPTIVE NO.

MAY 16

Hollander, Myler; PERSONAL AUTH F. ! STATISTICS-M727, TR-88-188-AFUSR REPORT NO.

f 48820-85-C-0007 CONTRACT NO.

PROJECT NO.

405.4

AF. 3 TR :3 0442 MONITOR:

# UNCLASSIFIED REPORT

response to an invitation to give a non-technical talk in a session of used to 'Practical Aspects of Statistics' at of Statistical Mestings. The goal of the encourage interest in statistics among nonsymbols and mathematics and aiming for the incrent research interest. The problems have int they can be stated in a relatively easy iders a problem that pertains to assessing Chability. To conform to the spirit of the a chosen to describe the problems in words solutions however are difficult. References Luttons are given; all three problems have tilem of Section 2 deals with survivorship ins estimation of average remaining life. similarity between species presence or This is an expository paper written in emain unsolved and are currently under absence on wands, Section 4 presents a problem in The suther chose to describe three Clan. (Author) Session is statisticia a session c sspects than geometrical the frature non-scatis: problems of fashion. Th Section 3 de-emphasi. study. The data and c to partial the degree session, I

(1) \*STATISTICS, ESTIMATES, PHORLEM SOLVING (SERVICE LIFE), TABLES(DATA) LIFE EXPEC. DESCRIPTORS

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AG-A170 057

12/1 AD-A170 058

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STANFORD UNIV CA INFORMATION SYSTEMS LAB

On Mappings between Covariance Matrices and Physical Systems 3

139

#) 8)

Kailath, T. ; Lev-Art, H. PERSONAL AUTHORS: DAAG28-83-K-0028, AFDSR-83-0228 CONTRACT NO.

2304 PROJECT NO.

Ş TASK P

TR-88-0404 **AFOSR** MONITOR:

UNCLASSIFIED REPORT

Pub. in Contemporary Mathematics, v47 SUPPLEMENTARY NOTE: p241-252 1985.

definite Toeplitz kernels (or operators) and self adjoint second order differential equations describing physical systems such as vibrating atrings and noruniform transmission lines. To get in some sense a more complete picture of this mapping, it is necessary to extend it to mapping between families of non-Toeplitz operators and Toeplitz operator and all operators congruent to it in a certain sense; correspondingly, one adjoins different boundary conditions to the physical system associated by the Toeplitz operator. It is noted that the concept isplacement structure of operators is naturally lated with the above results. Also that the generalized mapping leads to new classification of positive definite operators into 3 distinct classes, to In different contexts, several authors Implementations for prediction and estimation filters generalizations of orthogonal polynomials and to new Christoffel Darboux formulas for fast algorithms for have established blunique mappings between positive classes of physical systems. Each family contains a operator factorization, and to efficient new ABSTRACT:

DESCRIPTORS: (U) \*MAPPING(TRANSFORMATIONS),
MATRICES(MATHEMATICS), TRANSMISSION LINES, VIBRATION,
LINEAR SYSTEMS, LEAST SQUARES METHOD, CONVOLUTION

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# DITC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN34M

AD-A170 01: CONTINUED AD-A170 ACC

INTEGRA > ERNEL FUNCTIONS, ALGORITHMS, OPERATO > THEMATICS), UNTHOGONALITY, REPRINTS

AD-A170 052 8/7 12/1

MASSACHUSETTS INST OF TECH CAMBRIDGE LAB FOR COMPUTER SCIENCE

(U) Layer by Layer Reconstruction Methods for the Earth Resistivity from Direct Current Measuraments,

NOV 85 11P

PERSONAL AUTHORS: Levy, Bernard C.

CONTRACT NO. AFOSR-82-0138

PROJECT NO. 2304

TASK NO. A1

MONITOR: AFOSR TR-86-0449

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in IEEE Transactions on Geosciance and Remota Sensing, VGE-23 nd p8+1-850 Nov 85.

ABSTRACT: (U) Several methods for reconstructing the resistivity profile of a layered laterally homogeneous earth from direct current measurements are described. These methods recover the resistivity of the earth layer by layer in a recursive way, and require a very small amount of computational effort. They are obtained by transforming the inverse resistivity problem into an equivalent inverse scattering problem, and by applying efficient signal processing algorithms such as the Schurfast Cholesky or Levinson recursions to the transformed fast Cholesky or Levinson recursions to the transformed problem. These algorithms operate on a layer stripping or layer accumulation principle, and are shown to be related to previous reconstruction techniques of Pekeris, Koefoed, Kunetz and Rocroi, and others.

DESCRIPTORS: (U) \*EARTH MODELS, \*ELECTRICAL RESISTANCE, INVERSION, HOWOGENEITY, LAYERS, DIRECT CURRENT, DEPTH, TRANSFORMATIONS(MATHEMATICS), RECURSIVE FUNCTIONS, SIGNAL PROCESSING, ALGORITHMS, REPRINTS

IDENTIFIERS: (U) Earth resistivity, inverse scattering, Resistivity prospecting, Layered earth models, Reconstruction methods, PE61102F, WUAFOSR2304A1

AD-A170 052

# SEARCH CONTROL NO. EVN34M DIIC REPURT BIBLIDGRAPHY

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AD-A170 043

TENNESSEE UNIVERNOVILLE PLASMA SCIENCE LAB 20/3 20/1 20/8 AD-A170 043

(U) Investignion of RF Emissions from Two Beams Interscing with an Electric Field Dominated Plasma

DENTIFIERS: (U) Diagnostics(Plasma), Magnetic pumping, Penning discharges, Steady state plasmas, Ion temperatures, Dual beam instabilities, Confinement(Plasma), Heating(Plasma), PEGi102F, WUAFOSR2301A8

IDENTIFIERS:

DESCRIPTIVE PASTE, Final rept. 15 Mar 81-14 Mar 88.

180P MAY BG Roth, J. R. PERSONAL AUTHORS

1-18 PST-88-1 REPORT NO. AF USR - 8 1-0083 CONTRACT NO.

101 PROJECT NO.

3 TASK NO. AF: 9 TF . 3:0474 MONITOR:

# UNCLASSIFIED REPORT

icam of experimental research on a steady to field dominated, classical Penning tt. University of Tennessee's Plasma Science or input of the classical Penning discharge is RF radiation was no more than 0.1 or 1.0%. Among the scientific results of this time observation and identification of the imaission frequency. The Remissions in the geometric mean emission freuency and could produce, under some conditions, a ing objectives of this research program were This final scientific report summarizes a issions and RF interactions with a steadys during the latter part of this contract t white noise spectrum from below 0.5 frequencies above 1.2 GHz. quantitative associated with two interpenetrating the efficiency of converting the do Ė investigati showed that discharge A: its harmon! virtuelly ' megahertz . five year r state, ele. to study R! state, elepecestric : into broad Laboratory electron D contract a: associated .lectrical ABSTRACT:

\*ELECTRON BEAMS, (1) \*PLASMA OSCILLATIONS, \*ELECTRON E (1) \* \*ELECTRIC FIELDS, EMISSIVITY, (3) \*ACTION), RADIOFREQUENCY, TUMBULENCE, (1) TRANSPORT PROPERTIES, THESES DESCRIPTORS: COUPLING(1

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# SEARCH CONTROL NO. EVN34M DITIC REPORT BIBLIDGHAPHY

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	STATE UP . OF NEW YORK AT STONY BROOK DEPT OF APPLIED MATHEMATICS.
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AD-A176 039	STATE UP . OF NEW YORK AT !

on Bayes Empirical Bayes Estimation by Means of et Processes (C) A Not

DESCRIPTIVE NUTE: Research rept. Jul 84-Sup 85, 2 1P SEP 85

Kuo, Lynn ; AMS-85-80 PERSONAL AUTHORS: REPORT NO

AF05R-84-0138 CONTRACT No.

2304 A S PROJECT NO TASK NO AF05R 18-86-0425 MONITOR:

# UNCLASSIFIED REPORT

Baves estimators are derived by means of the Bir Mat process hyperprior approach for general empiric Bayes problems. For any sample size, these estimals are expressed concisely as ratios of two multides stonal integrals. A numerical example on Poisson stoling is given. Kerwords: Bayestan norpary, tric density method; compound Poisson nonpara tric density a distriction. (Author)

S. (U) \*ESTIMATES, \*DIRICHLET INTEGRAL, \*SITY FUNCTIONS, STATISTICAL SAMPLES, BAYES UNPARAMETRIC STATISTICS, RANDOM VARIABLES IN INFERENCE, MONTE CARLO METHOD DESCRIPT POISS

·Bayes estimators, PEB1102F 3

20/3

MIV COLLEGE STATION DEPT OF ELECTRICAL

(U) A Movel Differential Geometric Approach toward Robust Signal Detection.

Rept. for 23 May 65-22 May DESCRIPTIVE MOTE:

MAY 88

PERSONAL AUTHORS: Thompson, M. W. ; Halverson, D. R.

AF05R-82-0033 CONTRACT NO.

2304 PROJECT NO.

¥ FASK NO.

TR-86-0432 AFUSR MONITOR:

### UNCLASSIFIED REPORT

SUPPLEMENTARY (ADTE: Presented at Conference on Information and System Sciences, 18-21 Mar 88.

ABSTRACT: (U) We present a new approach toward robust signal detection which is based on techniques rooted in differential geometry. These methods, as opposed to the commonly employed classical saddlepoint criteris, readily admit the quantitive measure of the degree of robustness over very general classes of admissible noise distributions. Our approach thus is seen to make possible investigations of the quantative tradeof between optimal performance and robustness, and we (1) ustrate the application of this differential geometric approach via various specific examples. (Author) ABSTRACT:

\*SIGNAL PROCESSING, SIGNALS, DETECTION DESCRIPTORS: (U) NOISE, REPRINTS

\*Robust signal detection, Robustness, IDENTIFIERS: (U)
PEB1102F

AD-A170 035

EVN34M 113 PAGE

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# SEARCH CONTROL NO. EVN34M DIIC REPURT BIBLIOGRAPHY

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AD-A170 ( 14	OHIO S IE

\* Dysfunctions and Abrogation of the Inflammatory of L' Environmental Chamicals (C)

DESCRIPTIVE NOTE: Final rept. 1 Jul 83-31 Dec 85

316

FEB 8

THORS: Olsen, Richard G. PERSONAL

F49820-83-C-0114 CONTRACT

2312 PROJECT

TASK NO MONITOR

### UNCLASSIFIED REPORT

TR - 86 - 0466

AF OSR A 5

First, in vivo or in vitro exposure to UDMH in enhancement of the allogeneic mixed lymphocyte ce of certain macrophage functions by UMMI has s which are associated with macrophuge related strated, such as decreased prostaglandin E2 / UDMM. Preliminary experiments also suggest enchances interleukin 1 production by s and interleukin 2 activity on cell is and chemiluathescence. Inhibition of these ression could explain the imminenhancement of 1.1-dimethylhydrazine (UDMH) induced unchent have been noted and at least two rechanisms for immunoenhancement have been During this reporting period, further tion, but that it inhibits interleukin i a measure of cell mediated immunity sugge. result Interi produc prolli BSTRACT T. 218800 Deed -Induc that prope. CHEX respo POCFC.

(U) •DIMETHYDRAZINES, •IMMUNITY, 10N, EKPOSURE(PHYSIOLOGY), IMMUNOLOGY, 5, PHAGOCYTES, FROSTAGLANDIN, CHEMILUMINESCFNCE, 12-LYSIS, IN VITRO ANALYSIS, IMMUNOSUPPRESSICN activi: . I > II DESCRIPT . INTL

Interleukin 1, Interleukin 2, PEbilo2F,

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AD-A170 032

UNIVERSITY OF SOUTHERN CALIFORNIA LOS ANGELES DEPT OF COMPUTER SCIENCE

Metaprogramming: A New Methodology for Construction of Callity Software. 3

Final rept. 18 Jun 81-14 Sep 84, DESCRIPTIVE NOTE:

JAN BG

PERSONAL AUTHURS: Flon, Laurence ; Cooprider, Lee ; Horowitz, Ellis ; Curren, Arne M. ; Peradan, Thierry ;

63-4510-1741 REPORT NO. AF057 -81-0199 CONTRACT NO.

2304 PROJECT NO.

A2 TASK NO.

TR-28-0419 AFOSR HONITOR:

# UNCLASSIFIED REPORT

programs. The third was a new method for writing programs that involves pictures. For each of these conditions a student Ph.D. theris was produced, in particular Dr. Anne Curran worked on the first problem, Dr. Thierry Paradan ISTRACT: (U) There were three major contributions that came out of this research. The first was the development of a program development and remove permits software to be reused. The second was the development of techniques for the design and specification of concurrent worked on the second problem and Dr. Georg Raeder worked on the last problem. Since each of their contributions are radically different, this summary report is broken into three categories, each based upon their work ABSTRACT:

PRUGRAMS, REUSABLE EQUIPMENT, QUALITY CONTROL, SPECIFICATIONS, COMPUTER PROGRAM RELIABILITY, COMPUTER GRAPHICS, METHODOLOGY, SYSTEMS ENGINEERING, MODULAR CONSTRUCTION, HIGH LEVEL LANGUAGES, COMPUTER PROGRAM VERIFICATION, USER NEEDS, THESES \*COMPUTER PROGRAMMING, \*COMPUTER 9 DESCRIPTORS:

Metaprogramming, ADA programming Ξ

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DITC REPORT BIBLIDGRAPHY SEARCH CONTROL NO. EVN34M

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PITTSBURGH UNIV PA CENTER FOR MULTIVARIATE ANALYSIS

12/1

AD-A170 030

(U) Detection of Outliers in Multivariate Linear Regression Model.

DESCRIPTIVE NOTE: Technical rept.

APR 86 10P

PERSONAL AUTHORS: Naik, Dayanand N. ;

REPORT NO. TR-88-11

CONTRACT NO. F48620-85-C-0008

PROJECT NO. 2304

TASK NO. AS

MONITOR: AFOSR TR-88-0358

# UNCLASSIFIED REPORT

ABSTRACT: (U) This article suggests welltvariate kurtosis measure as a statistic for detaction of outliers in a multivariate livear regression model. The statistics has some local optimal properties. Keywords: Multivariate linear regression model; Detaction of cutilers: Multivariate kurtosis; and Locally best invariant test.

DESCRIPTORS: (U) \*LINEAR REGRESSION ANALYSIS, \*MULTIVARIATE ANALYSIS, \*RANGE(EXTREMES), DETECTION. INVARIANCE MATHEMATICAL MODELS, VECTOR ANALYSIS

1DENTIFIERS: (U) +Outliers, Kirrtosis, PEB1102F

# DITC REPURT BIBLIDGRAPLY REARCH CONTROL NO. EVN34M

. AD-A170 029 CONTINUED	INTERACTIONS, IONIZATION, MAGNETIC FIELDS, MOLECULES, THEORY, TURBULENCE, VELOCITY, PLASMA SHEATHS,	MAGNETOHYDROCYNAMICS, ANODES, CATHODES, UREAKDOWN(ELECTRONIC THRESHOLD)	IDENTIFIERS: (U) PEB1102F
AD-A179 029 20/9	STAMEORD UN CA HIGH TEMPERATURE GASDYNAMICS LAB	(U) Fundame: . Processes in Partially Ionized Plasmas.	DESCRIPTIVE !: Aumai scientific rept. 1 feb 85-31 Jan. 86.

826 FE. 38

, Self, S. A. Kruger, C. H., ¡Mitchner, M. PERSONAL AUT

31 05R-83 0108 CONTRACT NO

5 PROJECT NO.

MONITOR:

TASK NO.

0345

# UNCLASSIFIED REPORT

ABSTRACT:	
	This research is directed to three sajor
	ation in molecular plasmas, discharge
	alectrode interaction) and interaction of
discharges	fluid dynamics Recombination and
tonization	fundamental processes that play a role in
	ications and natural phenomena that
	Iy tonized plassas. Under the present
program, "	ments have been designed and theoretical
BOB J See	ted to obtain a better knowledge of the
	on recombination in the presence of
	es. Studies are continuing of the near-
	in and the processes by which current is
	ween the pleamas and the electrodes. The
-	theoretical modeling of these processes
	a stated and published. A study of the
•	discharges and fluid dynamics has mussured
	it sacondary flows caused by the interaction
	field with a current carrying plasma
	1110 been made of secondary flows, and of
	on profiles of extal velocity, turbulence
intensity	electrical conductivity.

ONDARY FLOW, \*ELECIRIC DISCHARGES, S. AKES, ELECTRIC DISCHARGES, S. AKES, ELECTRICAL CONDUCTIVITY. C. ECTRONS, FLUID DYNAMICS, INTENSITY, DESCRIPTORS: REACTIONS \*ELECTROD: ELECTRODES

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# DITC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN34M

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AD-A170 02					12/1	_	<i>.</i>	AD-A170 C.

(U) On Ellion of Dimensionality under Multivariate
Regilation and Cenonical Correlation Models

DESCRIPTLY MOTE: Technical rept.,

Annual technical rept. 1 Mar 85-28 Feb

Greengard, P.

PERSONAL AUTHORS:

**4**0

MAR 86

AF05R-84-0086

CONTRACT NO.

2312

PROJECT NO.

(U) Role of Protein Phosphorylation in Regulation of

Bloresctivity.

DESCRIPTIVE NOTE:

ROCKEFELLER UNIV NEW YORK

-

APR 88 53P PERSONAL 7 10RS: Krishnalah,P.R.;

REPORT NO TR-86-10

CONTRACT N: F49820-85-C-0008

PROJECT NO 2304

MONITUR: AFOSR

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TASK NO.

ITUR: AF0SR 14 88-0343

# UNCLASSIFIED REPORT

UNCLASSIFIED REPORT

TR-88-0467

A2 Afosr

TASK NO.

SSTRACT: 30 In this paper, the author gives a review of the Interature on various techniques for determination of the roles of repression matrix and repression matrix. reviewed involve not only tests of hypotheses well selection methods based upon information and canonical correlation models are reviewed. t analysis; sconvmetrics; likelihood ratio criteria. Keywords: Contingency tables; smilitariate regression equations model; an matrix. Also, methods of selection of uniginal variables under multivariate . 8 of regression matrix and canonical or and structural relations; pattern or random effects model, (Author) mports . theoret : Correlat recognit: but also Correlat regress discrimi

DESCRIPTOR (U) \*REGRESSION ANALYSIS, \*MULTIVARIATE ANALYSIS, \*RELATION, MATRICES/WATHEMATICS), MATHEMATIC: \*L MODELS, PATTERN RECOGNITION, ECONOMETRICS

IDENTIFIERS (U) PEB1102F

AD-A170 025

ABSTRACT: (U) Four neuron-specific phosphoproteins ad calcium/calmodulin-dependent protein kinase II were used as model proteins to investigate the role of protein phosphorylationin the regulation of bioreactivity in the nerfous system. These studies were carried out at the levels of electrophysiology, blochemistry, and molecular biology, in an attempt to obtain the dependent proatin kinase II were pressure-injected into the preterminal digit of the squid glant synapse to test directly the possible regulation of neurotrnsmitter release by these substances. The binding of Synapsin I to small synaptic calmodulin-dependent protein kinase II was examined. The mechanism of calcium/calmodulin-dependent protein kinase II and subcallular distributions of proteins IIIa and IIIb in the nervous system were determined. The regional and subcallular distributions of protein p38 in the nervous system were obtained.

DESCRIPTORS: (U) \*PROTEINS, \*PHOSPHORYLATION, \*NEUROCHEMISTRY SYNAPSE CALCIUM. PHOSPHORUS TRANSFERASES, NERVE CELLS, RIBONUCLEIC ACIDS, PROTEIN METABOLISM, SUBSTRATES, BIOCHEMISTRY, CLONES.

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PAGE 117 EVN34

SEARCH CONTROL NO. EVN34M DITIC REPORT BIBLIDGRAPHY

TIMMED 40-A170 024 ALCLE OT TOES

TIDES, MOLECULAR BIOLDGY, LCIDS, CEPHALDPODA DEDXYRIBONUC.

Phosphoproteins, WUAFOSR2312A2, 3 I CENTIFIERS: PEB1102F

AD-A170 021

12/1 5/3

NORTH CAROLINA UNIV AT CHAPEL HILL CENTER FOR STOCHASTIC PROCESSES

(U) On the Pricing of American Options.

Technical rept. Sep 85-Aug 86, DESCRIPTIVE NOTE:

HAY 80

Karatzas, Toannis PERSONAL AUTHORS:

TR-137 REPORT NO. F49620-85-C-0144, NSF-DMS84-16736 CONTRACT NO.

2304 PROJECT NO.

8 TASK NO. AF0SR TR-66-0443 MONITOR:

## UNCLASSIFIED REPORT

erticle Bensoussan presents a rigorous treatment of the pricing problem for contingent claims that can be exercised at any time before maturity. He adapts to this situation the Black A Scholes methodology of duplicating the cash flow from such a claim by managing skillfully a self-financing portfolio that contains only the basic instruments of the market, i.e., the stocks and the bond, and that entails no arbitrage opportunities before exercise. Under a condition on the market model called completeness Bensoussan shows that the valuation of such claims is indeed possible and characterizes the exercise that the exercise. payoff from the contingent claim. Such conditions are not satisfied, however, by the prototypical examples of such claims, i.e. American call options. The aim of this paper is to offer an alternative methodology on this problem, which is actually simpler and manages to remove time in terms of an appropriate optimal stopping problem stringent boundedness and regularity conditions on the In the study of the latter, Bensoussan employs the so-called 'penalization method,' which forces rather In an important and relatively recent the above restrictions. 3 ABSTRACT:

\*MATHEMATICAL MODELS, \*INVESTMENTS, 9 DESCRIPTORS:

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SEARCH CONTROL NO. EVN34M DIIC REPORT BIBLIOGRAPHY

> CONTINUED AD-A170 021

ES(MATHEMATICS), MATRICES(MATHEMATICS), BROWNIAN STOPPING

Bensoussan model, PEB1102F <u>.</u> IDENTIFIERS WUAFOSR2.

AT AND T BELL LABS INC MURRAY HILL NJ

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AD-A170 020

(U) An Investigation into the Effects of Peptide Neurotransmitters and Intracellular Second Messengers in Ret Central Neurons in Culture.

Annual rept. 15 Oct 84-15 Oct 85 DESCRIPTIVE NOTE:

82P 8 ž

PERSONAL AUTHORS: Connor, John A.;

2312 PROJECT NO.

2 TASK NO. MONITOR:

AF0SR TR-88-0466

## UNCLASSIFIED REPORT

several areas of our research proposal. We have developed a Ca-imaging system which is now capable of resolving subcellular Ca changes on the order of seconds. This Ca-imaging system has been used to study neurotransmitter actions in culture diencephalic and careballar neurons. messenger action in identifiable molluscan neurons. The concentration of endogenous cyclic AMP in single cells was measured, and under stimulated conditions the lavals were sufficient to suggest activation of cyclic AMP—induced membrane conductances. Both classical (GABA) and modulatory (thyroid hormone) neurotransmitters were found to affect cellular Ca(2+) Significant progress has been made in potential. We have also continued studies of second levels in these cells without depolarizing resting ABSTRACT:

SCRIPTORS: (U) \*NEUROCHEMICAL TRANSMISSION, \*CALCIUM,
\*PEPTIOES, \*NERVE CELLS, MEMBRANES(BIOLOGY), BRAIN,
\$YNAPSE, CEREBELLUM, ADENOSINE PHOSPHATES, AMINO ACIOS,
BUTYRIC ACIDS, THYROID HORMONES, CATIONS, MOLLUSCA,
ACTIVATION, HISTAMINE, CYTOCHEMISTRY, NERVE BLOCKING, DESCRIPTORS: (U)

GABA(Gamma Aminobutyric Acid), PEB1102F, WUAFOSR2312K2 AMP(Adenostne Monophosphate) IDENTIFIERS: (U)

AD-A170 020

AD-A170 021

# SEARCH CONTROL NO. EVN34M DITC REPORT BIBLIOGRAPHY

AD-A170 004

PITTSBURGH ( . IV PA CENTER FOR MULTIVARIATE ANALYSIS int Methods in the Study of Classes of Classes of Classifications and some Applications to Extrem 3

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AD-A170 014

Tables Conting

DESCRIPTIVE Note: Technical rept.,

APR 16

Subramanyam, K. , Rao, M. B. PERSONAL AUT!

14 88-12 REPORT NO. f 49620-85-C-0008 CONTRACT NO.

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TASK NO.

A! 2 Th 3-0358 POMITOR:

## UNCLASSIFIED REPORT

masts independence against the alternative ant dependence one can use the method of , is neither compact nor convex. But the set are positive quadrant distributions with ata have finite support. A simple method to extreme points of these convex sets is context of contingency tables for testing Sivariate distributions; Positive quadrant a case of elscrate bivariate distributions 's is a convex set. These convex sets are analysis to compare the performance of > Keywords: Extreme point; Convex set; stative quadrant dependence; and Power The set of all bivariate positive contingency tables. Compact Set fixed marg compact in if the mar enamerate : given. In . function a distribution of all biv extreme po dependence positive c the mil 7 ABSTRACT:

SCRIPTORS: (U) \*BIVARIATE ANALYSIS, \*DISCRETE DISTRIBUTION CONVEX SETS, QUADRANTS, DISTRIBUTION DESCRIPTORS

Contingency tables, WUAF0SR2304A5 ĵ IDENTIFIERS: PEB1102F

(U) Analysis of Fault Tolerant Computer Systems. DESCRIPTIVE NOTE: Technical rept.

MIAMI UNIV CORAL GABLES FLA PLASMA PHYSICS LAB

PERSONAL AUTHORS: Sumita, Ushio ; Shanthikumar, J. G. Masuda, Yasushi ;

AF0SR-84-0205, NSF-ECS84-04071 CONTRACT NO.

2304 PROJECT NO.

TASK NO.

AFOSR MONITOR:

TR-86-0403

# UNCLASSIFIED REPORT

In recent years, the concept of the performability of such systems has drawn the attention of many researchers In many critical applications of digital systems, fault tolerance has been an essential architectural attribute for achieving high reliability. In this payer, we develop a general Markov model for fault tolerant computer systems. Various important performance measures, including the performability measures as well as some new performance measures, are efficient computational procedures are developed for calculating these performance measures based on the treated in a unified manner. Furthermore general and uniformization technique of Keilson (1874, 1979). A numerical example is given to illustrate the computational procedures developed. (Author) ABSTRACT:

DESCRIPTORS: (U) \*FAULT TOLERANT COMPUTING, \*SYSTEMS ANALYSIS, DIGITAL COMPUTERS, MATHEMATICAL MODELS, MARKOV PROCESSES, AVAILABILITY, RELIABILITY, COMPUTATIONS

WUAF0SR23034A5, PEB1102F IDENTIFIERS: (U)

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# SEARCH CONTROL NO. EVN34M DTIC REPORT BIBLIDGKAPHY

AD-A170 002 0/10 9/10 AD-A170 ...

Fraction and Viscoslettic Characteristics of the Human Carried Spine, 3

BETH I - 4EL HOSPITAL BOSTON HASS

22 1P ., W

PERSONAL AUTHORS: Edwards, W. T. ; Hayes, W. C. ; Kou, Y. F. Coffee M. S. ; White, A. A. , III ;

ESCRIPTCRS: (U) \*SPINAL COLUMN, \*BONE FRACTURES, \*VISCOELASTICITY, BIODYNAMICS, MOTION, SEGMENTED, NOWDESTRUCTIVE TESTS, LOAD DISTRIBUTION, DISPLACEMENT, STREMOTH(MECHANICS), TEST METHODS, FAILURE, CREEP, STIFFNESS, BENDING, TRANSDUCERS

DESCRIPTORS:

flexion.

tissue failure before Luny fracture for loading in

CONTINUE

Vertebrae, WUAFOSR2312A2, PEB1102F

IDENTIFIERS: (U)

F49620-81-K-0010 CONTRACT NO.

2312 PROJECT > >

7 TASK NO

AF0SR TR-88-0453 MONI TOR

# UNCLASSIFIED REPORT

ISTRACT (U) Cervical spine segments were tested both nords: citivaly and destructively to determine the load-displement relationships and vertebral strength. For this kind, a servo-hydraulic multi-degree of freedom material testing machine was designed and constructed. This receipts called the Planar Testing Apparatus (PTA) segments was conducted following the completion of the PTA to check and demonstrate the test system. The results from a sun lumbar specimens were also included in this . Was that to generate motions needed to characterize the displanment rate. Curves for load vs. displacement (both the six degree of freedom motion of the middle sloody as it moved relative to the two adjacent of during the mechanical tests. Results for spine speciens indicated that a low runt rates (less than 5 mm/sec or 5 deg/sec) or debendence of spinal segment stiffness on as and their interconnecting soft tissue, discs. The cervical spine segments consisted of three sagittel response of spine segments. A study of the viscom exits properties of two vertebrae lumbar spine unts. A noninvasive electro-mechanical ABSTRACT **Pepor**t dispi Verte verte Cervi pue disp

AD-A170 002

Compression that in tension. All specimens displayed soft

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axile . As shear) and moment vs. segittal bending displaced large regions of small load and low slope as displacement increased. All specimens were stiffer in

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# SEARCH CUNTROL NO. EVN34M DTIC REPORT BIBLIDGRAPHY

CONTINUED

AD-A170 001 20/11 11/3 AD-A170 001

(U) Study of high Temperature Failure Mechanisms in SAN ANTONIC TEX DEPT SOUTHWEST RE VOCH INST MATERIALS SOUNCES

8 DESCRIPTIVE NO.E: Annual rept. 1 Apr 85-31 Mar Ceremics

APR 16

Page, Richard A. ; Lankford, James ; PERSONAL AUTHORS

SCRIPTORS: (U) \*CCNAMIC MATERIALS, \*FAILURE (MECHANICS), GRAIN BOUNDARIES, CAVITATION, CREEP, CRACK PROPAGATION, TENSILE STRESS, LOADS (FORCES), NUCLEATION, STRAIN (MECHANICS), DAMAGE ASSESSMENT, NEUTRON SCATTERING, STEREOPHOTOGRAFHY, STOCHASTIC PROCESSES, SLIDING, MATHEMATICAL MODELS, HIGH TEMPERATURE

PEB1102F, WUAFOSR2308A2

3

IDENTIFIERS:

sliding. A degree of randomness is also sposed by the noruniform distribution of nucleation sites. These results sugggest that the measurement of grain boundary sliding rates and the development of a statistical model of cavitation will be crucial to the understanding and

modeling of tensile creep failure.

DESCRIPTORS:

F 49820-85-C-0073 S - <1-8578/2 CONTRACT NO. REPORT NO.

PROJECT NO.

TASK NO.

MONITUR:

0485 AF:

## UNCLASSIFIED REPORT

1 kdy involving experimental characterization wodeling of grain boundary cavitation and with in structural ceramics exposed to pure a The major experimental techniques program are the use of small-angle ing to characterize cavity nucleation and colmaging analysis to characterize the repress is summarized. The design of the representation which is being used for the like damage and for creep crack growth, is progress and on the determination of tion conditions that are adequate for the unalysis is also discussed. The second cavitation a uses primarily due to the dependence of both cavity nucleation and cavity growth on grain boundary report describes the results of a critical of experimental and theoretical studies of too in ceramics. The results of this / have identified a number of stochastic ain fields associated with growing creep i first section of the report, the This report summarizes the results of a vitation. The stochastic nature of pure tensile employed in neutron sca: experiments) aspects of and analytic section of critical st. fundamental creep crack tensile los creation of Surface prstereoimagi review of r Creep Cavit. Cracks. In growth and stress and discussed. ABSTRACT:

43-A170 001

AD-A170 001

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# SEARCH CONTROL NO. EVN34M DITIC REPORT BIBLIDGRAPHY

AD-A189 887 " AT AUSTIN DEPT OF COMPUTER SCIENCES . 7/8 AD-A169 9 TEXAS C

3 TRAC lexas Reconfigurable Array Computer): An Envis exent for Parallel Computing. DESCRIPTIV NOTE: Final rept. i Feb 84-31 dan 85 TRAC 3

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Browns, J. C. PERSONAL ACTIONS:

14-C-0020 F 490 CONTRACT

2304 PRUECT X

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TASK NO.

IN 86-0460 AF USR MONITOR:

## UNCLASSIFIED REPORT

Pub. in IEEE, p284-288 1884. SUPPLEMENT OF NOTE: ca) This paper defines one sot of requirements esstul general purpose parallel architecture, the design concepts of the Texas Reconfigurable cater (TRAC) and then demonstrates that the TRAC or fulfills these requirements. It will be seen and to the I/O problems for a many-processor architecture. single purpose architectures. Special is paid to architectural support for software explements a general purpose parallel a system through its ability to implement a (Author: anchite that Th spectru at tent: ABSTRACT: for a s describ Array C comput

(U) \*COMPUTER ARCHITECTURE, \*PARALLEL COMPUTATIONS, REQUIREMENTS, INPUT OUTPUT REPRINTS PROCESS. DESCRIVE

(U) TRAC(Texas Reconfigurable Array PEB1102F, WUAF0SR2304A3 Computer **IDENTIFIE** 

20/4

STANFORD UNIV CA DEPT OF MATHEMATICS

(U) Classroom Notes in Applied Mathematics,

PERSONAL AUTHORS: Verman, Ghast R.; Keller, Joseph B.

AF0SR-85-0007 CONTRACT NO.

2304 PROJECT NO.

TASK NO.

TR-86-0470 AFOSR MONITOR:

# UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Seminar on Nonlinear Partial Differential Equations, p89-113 1984.

surface tension is taken into account. Finally the contact of an inflated membrane, such as a ballo n or tire, with a solid surface is formulated. This problem is solved by the method of matched asymptotic expansions. hydrostatic aguilibrium is considered. Then the effect of ISTRACT: (U) free boundary problems are defined and illustrated by several problems in mechanics. First the problem of finding the free surface of a liquid in when the contact area is small. (Author) ABSTRACT: (U)

ESCRIPTORS: (U) \*BOUNDARY VALUE PROBLEMS, \*APPLIED MATHEMATICS, LICUIDS, HYDROSTATICS, EQUILIBRIUM(GENERAL), INTERFACIAL TENSION, REPRINTS DESCRIPTORS:

Free surface, PEG1102F, WUAFOSR2304A4 IDENTIFIERS: (U)

AD-A169 989

# SEARCH CONTROL NO. EVN34M DTIC REPURT BIBLIDGRAPHY

AD-A169 896	12/1	AD-A159 995 12/1
RENSSELAL S	RENSSELAL COLVTECHNIC INST. TROY NY DEPT OF MATHEMATICAL SCIENCES.	CALIFORNIA UNIV SANTA BARBARA ALGEBRA
(U) Scannt:	(U) Scannic Control of a Vibration String	(U) Mixed Multiplicativity and 1 sub p i
	A	JAN 86 11P
PERSONAL AL	The state of the s	PERSONAL AUTHORS: Goldberg, Moshe;

Norms for Matrices,

McLaughlin, J. R.; Slamrod, M. NO0014-84-K-0518, AF0SR-81-0172 CONTRACT NO.

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PERSONAL AL

AF0SR-83-0150

CONTRACT NO.

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PROJECT NO.

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TASK NO. MONITOR:

2304 PROJECT NO.

TASK NO. MONITOR:

Th 56-0387

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Applied Mathematics and Optimization, vi4 p27-47 1986.

the purpose of this paper is to construct a feedback control law for a vibrating string in rest of this paper is divided into four tion i reviews the necessary results needed and section 3 applies this theory is no section 4 if is shown that the results in in the decay of (y, y sub t) for a smooth phi . tropport. theory of to (F). Fi are sharp yield asyn ABSTRACT: (! a stabiliz: sections. שו ווסטו ניצי

\*FEEDBACK, \*CONTROL SYSTEMS, BOUNDARY MONLINEAR ALGEBRAIC EQUATIONS, SLZIZE3: <u>-</u> POLYNOMIAL. VALUE PROB! DESCRIPTORS:

(U) \*Vibrating string equation, PEB1102F, IDENTIFIERS: (U

# UNCLASSIFIED REPORT

AFOSR TR-88-0472

SUPPLEMENTARY MOTE: Pub. In Linear Algebra and Its Applications, v7: 1123-13f Jan 85.

SSTRACT: (U) Let C sub m x n denote the class of m x n complex matrices; and let N sub 1, N sub 2, and N sub 3 be arbitrary norms on C sub m x n, C sub m x k, and C sub k x n, respectively. In this poper we discuss a best (least) positive constant micro sub min. ABSTRACT: (U)

SCRIPTORS: (U) \*MATRICES(MATHEMATICS), CONSTANTS. LINEAR ALGEBRA, REPRINTS DESCRIPTORS:

Multiplicativity, PEG1102F. IDENTIFIERS: (U) WUAFOSR2304A3

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EVN34M 124 PAGE

# SEARCH CONTROL NO. EVN34M DIIC REPORT BIBLIOGPAPHY

-AD-A169 992

BROWN UP! . PROVIDENCE RT DIV OF ENGINEERING

\*4 Nonlinear Resonant Interactions in ictors. Semil (U) Picc

DESCRIPTIVE MITE: Final rept. 1 Jan 82-30 Sep 85.

MAR 86

PERSONAL ALTERNAS: Nurmitho, Arto V. ;

F-J820-82-C-0044 CONTRACT NO

2308 PROJECT NO

TASK NO.

8: 0-88-H: ST OSB MOLISTOR:

# UNCLASSIFIED REPURT

This research was aimed at advancing and utilization of selected optical of semiconductors containing magnetic elements or placed on the Interaction of such materials of laser radiation in order to a electronic and magnetic excitations under a electronic and magnetic excitations under magnetically oriented 'domains' through realequilibrium conditions. We hoped to generate is through experimental research for site fast optoelectronic devices. The mixed siconductors (Cd. Mn) Se and (Cd. Mn) Te were contract work has generated a number of e.g. we measured the formation of local. escopy with picosecond laser pulses. (Author) time speni unders ta used. The applicat crystal . microsco properti. Emphasis selected novel re-'Firsts' 15 55 study or ABSTRACT:

DESCRIPTOR MAGNETIC CADMICAL

\*Mixed crystal semiconductors, PE61102F, € IDENTIFIERS WUAFOSR2

9/3

AD-A169 991

TEXAS UNIV AT AUSTIN DEPT OF COMPUTER SCIENCES

Framework for Formulation and Analysis of Parallel Computation Structures. Ê

DESCRIPTIVE NOTE: Final rept. 1 Feb 84-31 Jan 85

PERSONAL AUTHORS: Browne, J. C. ;

CONTRACT NO. F49820-84-C-0020, NSF-MCS81-16099

2304 PROJECT NO.

83 TASK NO.

TR-88-0459 AFOSA MONITOR:

# UNCLASSIFIED REPORT

SUPPLEMENTARY NUTE: Pub. in Proceedings of the Annual Hawaii International Conference on System Sciences (18th), p2-7 1985.

ABSTRACT: (U) This paper gives a systematic methodology for the formulation of parallel computation structures and algorithms. The methodology supports both synthesis of parallel algorithms and analysis of parallel algorithms. (Auchor)

SCRIPTORS: (U) \*COMPUTER ARCHITECTURE, PARALLEL PROCESSING, ALGORITHMS, COMPUTATIONS, REPRINTS DESCRIPTORS:

IDENTIFIERS: (U) PEB1102F, WUAFOSR2304A3

# SEARCH CONTROL NO. EVN34M DTIC FEPORT BIBLIOGRAPHY

8/3 AD-AIR8 880

A UNIV AT CHAPEL HILL CENTER FUR STOCHASTIC NORTH CARO PROCESSES

1119 Deterministic RHO-Mixing Stationary . vance. (U) A Bilat Rendom

9 MAR BG . 5: Bradley, Richard C. PERSONAL AU

F 49620-85-C-0144, NSF-DMS84-01021 CONTRACT NO.

PROJECT NO.

**Y** TASK NO. MONITOR:

A: 3 Tr 3-0361

## UNCLASSIFIED REPORT

Pub. in Transactions of the American Mathematical Society, v294 n1 p233-241 Har 88 SUPPLEMENTARY WITE:

sequence (x , d) k, k epsilon Z) of random raviables is constructed such that the rho-mixing (maximal correlation measurable with respect to the double tail delta-field A (nondegenerate) strictly stationary mixing) contition is satisfied and each X sub k is ABSTRACT: (U. (Author) ESCRIPTORS: (1) \*SEQUENTIAL ANALYSIS, \*RAHDOM VARIABLES, CORRELATION STATIONARY, REPRINTS DESCRIPTORS:

(U) PEB1102F, WUAFDSR2304A5 IDENT IF LERS:

12/1 AD-A189 989 NORTH CAROLINA STATE UNIV AT RALEICH DEPT OF MATHEMATICS

(U) Difference Mathods for the Numerical Solution of Time-Varying Singular Systems of Difierential Equations.

139 APR 80 PERSONAL AUTHORS: Clark, Kenneth D.

AFDSR-34-0240, NSF-DMS83-18026 CONTRACT NO.

2304 PROJECT NO.

TASK NO.

TR-88-0445 AFOSR MONITOR:

# UNCLASSIFIED REPORT

JPPLEMENTARY NOTE: Pub. in SIAM Jnl. on Algebraic and Discrete Mathods, v7 n2 p236-248 Apr 86. SUPPLEMENTARY NOTE:

difference methods for the numerical solution of differential equations of the form A(t)x'+B(t)x(t)', (t) where A, B, and f are assumed sufficiently smooth in t in the interval I = (0,T) and A(t) is identically singular on I. These methods are straightforward extensions of the well-known Gear's backward difference methods (BDF's) and system can be transformed to a constant coefficient problem by a change of variable  $\kappa$  = Ly, and also who:week a related system can be transformed into a certain canonical form. The author also investigates the perturbation is not a continuous regularization. (Author) correspond to BDF's whenever A is constant. It is shown that the modified methods (\*BDF's) work whenever the perturbation. In particular, he shows the existence of examples where the BCF's converge but the pencil relationship between the convergence of BDF's and the continuous regularization of the system by its pencil This reprint introduces a class of ABSTRACT: (U)

DESCRIPTORS: (U) DIFFERENTIAL EQUATIONS, SOLUTIONS (GENERAL), NUMERICAL METHODS AND \*NUCEDURES, PERTURBATIONS, REPRINTS

\*Difference methods, PEB1102F IDENTIFIERS: (U)

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EVN34M PAGE . 128

# DITIC REPORT BIBLIOGPAPHY SEARCH CONTROL NO. EVN34M

AD-A168 887	9/3	AD-A169 986 20/2 7/3
TEXAS A	M UNIV COLLEGE STATION	MORTH TEXAS STATE UNIV DENTON DEPT OF CHEMISTRY
(U) An Ac Strok	is of a Morparamatric Detection Scheme for saling Noise,	(U) 6,6,8-Trinitropentacyclo(5.3.0.02,5.03,3.04,8)decane, c10468306
AL 85	76	G-4 13.00
PERSONAL A	RS: Halverson, Don R. (Mise, Gary L. )	PERSONAL AUTHORS: Ammon, Herman L.; Zhang, Dechun; Chof, C. S.; Sandus, S.; Marchand, A. P.;
CONTRACT No.	NO0014-81-K-0145, AF0SR-82-0333	CONTRACT NO. AFDSR-84-0085
PROJECT NO	2304	PROJECT NO. 2303
TASK NO.	45	TASK NO. 82
MONITOR:	5.R 5G-0434	MONITOR: AFUSR TR-88-0370
	UNCLASSIFIED REPORT	UNCLASSIFIED REPORT
SUPPLEMEN! Informat	MOTE: Pub. In IEEE Transactions on a Theory, VIT-31 nd p522-527 Jul 85.	SUPPLEMENTARY NOTE: Pub. in Acta Crystallographica, vC41 p404-408 1985.
ABSTRACT: may be constanting asy and the say and the this be this be detector	It is shown how a modified sign detector nec for the norparametric detection of a sal in strong mixing noise. An upper bound on ic performance of the detector is established, of a detector whose performance achieves is specified. The optimal design of the sample criterion is also and it is shown that there is a marked and it is shown that there is a marked.	ABSTRACT: (U) There is considerable interest in the synthesis and chemistry of strained energetic compounds. Polynitropolycyclic compounds are potineal members of this important class. In this paper, we report the structure of the first polynitrobishomocubane (I) to have been prepared. The structure of one other homocubane (momocubane reported.

ctor B und on Usbed	ABSTRACT: (U) There is considerable interest in the synthesis and chemistry of strained energetic compounds. Polynitropolycyclic compounds are potineal members of this important class. In this paper, we repoint the
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structure of the first polynitrobishomocubane (I) to have been prepared. The structure of one other homocubane (homocubanecarboxylic acid p-bromoanliide has been reported

in the detector designs resulting from the two miteria. Reywords: Nonparametric detection; ag noise; Modified rign detector, Reprints.

(U) \*\*MOISE REDUCTION, \*SIGNAL PROCESSING. CIRONICS), CONSTANTS, MIXING, NOISE, 4, REPRINTS, SIGNALS, ASYMPTOTIC SERIES

Nonparametric detection

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IDENTIFIE

\*MIXERS OPTIMIZ:

DESCRIPTO

Strong L

differe differe

DESCRIPTORS: (U) DECAMES, \*NITRO RADICALS, \*POLYCYCLIC COMPOUNDS, \*CRYSTAL STRUCTURE, SYNTHESIS(CHEMISTRY), MOLECULAR STRUCTURE, ENERGENIC PROPERTIES, X RAY DIFFRACTION

IDENTIFIERS: (U) \*Cubanes, Cubane/Polynitrobishomo, PF61102F, WUAFOSR23082

EVN34M

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# SEARCH CONTROL NO. EVN34M DIIC REPORT BIBLIOGRAPHY

AUSTIN DEPT OF COMPUTER SCIENCES

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AD-4169 951

TEXAS UNIV A

Computer), CSL programming language, CSL(Computation Structures Language), PEB1102F, WUAF0SR2304A3

CUNT INUED

AD-A168 981

(U) High Pericemance Parallel Corputing

Final rept. 1 Feb 44-31 Jan 8'1, ų DESCRIPTIVE N.

2AX 86

PERSONAL AUTH 5: Browne, d. C. ; Lipovski, G. J.

F 49820-84-C-0020 CONTRACT NO.

**♦**05. PROJECT NO.

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TASK NO.

HONITOR:

. 0457 نے ۲

# UNCLASSIFIED PEPORT

The 1884/85 accomplishments of the at High Performance Parallel Computing the protectype of the Texas.

Array Computer (TRAC) to a conflightation to of stability where it could support a seamely language programs, initial transitied mode of parallel computation is for a programming environment uniting. uctures Language, CSL) originally intended exploration of the expressive i porformance modeling system for parallel of development of algorithms for scheduling or realize configurations to configurable a flow models of parallel computation, rational status on an alternative host one this programming language, initiation of a graphical programming language based on all o' parallel computation mentioned r progress on a graphically interfaced based computer architectures research principled broaded br process and bringing to of the two Computation for use on gaoabilitie Sich is execution co the unlifted Reconfigur-and to a si dave lopment of circuits banyan net... development Petri jet computation preceding. ACST?ACT:

ASSEMBLY L' DESCRIPTOPS: ALCORITHMS.

TRAC(Texas Reconfigurable Array Ē DENTIFIERS

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# SEARCH CONTROL NO. EVN34M DITC REPORT BIBLIOGRAPHY

CALIFOR: 1 721Y BENKELEY DEPT OF MATERIALS SCIENCE 20/11 AD-A163 93

(U) Fatty v Behavior of Long and Short Cracks in Wrought and for Aluminum Alloys.

MINCRAL COSTNEERING

DESCRIPTIVE NOTE: Annual rept. 15 Apr 85-1 May 86

1279 MAY 86 Ritchie, Ropert O. ; Yu, Welkang ; PERSONAL A THORS:

UCB/RP/86/A1040 REPORT HO AF0SR-82-0181 CONTRACT No.

2308 PROJECT NO

• TASK NO.

TR-86-0447 AFOSB MONITOR:

# UNCLASSIFIED REPORT

plasticity or simply physically scall (i.e., < or = 1 mm), In a series of commercial aluainum alloys, with specific referer a to behavior at near-threshold levels (below approx. \*\*00001)mm/cycie. In this annual raport, the status of the program is described in terms of i) a described in terms of i) a described in terms of i) a noverloss on of results on the role of compression overloss in influencing fatigue crack growth in a new alumin. Althium alloy (2090) and a comparison of website in 2124 and 7150, ii) an evaluation of the role of crack the shielding in controlling the growth of short (50 to 400 micrometers' through-thickness and fift) a general assessment of the small crack it is concluded that the near-threshold behavior attframe and engine components. Accordingly, the current program is almod at identifying factors which govern the growth of such short cracks (in contrast to long cracks) Crac's and small (10 to 400 micrometers) surface cracks must be ensidered as one of the major factors limiting the appropriation of defect-tolerant fatigue design for STRACT: (U) The fatigue behavior of short cracks, which are small compared to the scale of the microstructure, small compared to the scale of local In 212. ABSTRACT: problem

CONTINUED AD-A169 980

of crack tip shielding, specifically from crack deflection and crack diosure mechanisms. Other factors responsible for anomalous small crack behavior, however, can be identified and are discussed in the report. of small cracks is strongly influenced by contiderations

•CRACKS, DEFECTS(MATERIALS), TOLERANCES(MECHANICS),
AMPLITUDE, LOADS(FORCES), CRACK PROPAGATION COMPRESSIVE
PROPERTIES, LITHIUM ALLOYS, THRESHOLD EFFECTS, SHIELDING,
DEFLECTION, MICROSTRUCTURE, GRAIN STRUCTURES(METALLURGY),
INHIBITION, RESISTANCE, FATIQUE LIFE \*ALIMINUM ALLGYS, \*FATIGUE(MECHANICS), 3 DESCRIPTORS:

SENTIFIERS: (U) Grack closure, Grack Inhit\*\*ton, Aluminum lithium alloys, WUAFOSR2306A1, PEC 2F IDENTIFIERS:

AD-A169 980

of long cracks and the near- and sub threshold bahavior

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# SEARCH CONTROL NO. EVN34M DIIC REPORT BIBLIDGRAPHY

5 5 70 AD-A100 B7C

SELINDIS UNIV CHAMPAIGN COGNITIVE PSYCHOPHYSIOLGAY LAB

The Event Related Brain-Potential as an Index of Information Processing and Cognitive Activity. A Program of Basic Research. Supplement A. Neuromagnetic Studies. 3

DESCRIPTIVE NOTE: Arnual progress rept. 20 Apr 84-31 Dec

1

Kaufman, Licyd ; Donchin, Emanuel ; PERSONAL AUTHORS:

CPL-88-1A REPORT NO.

F48620-85-C-0041 COMPRACT NO.

2313 PROJECT NO.

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TASK ID.

AF05A TR-86-0451 MONT TOR:

# UNCLASSIFIED REPORT

PERMICE: (U) A study was conducted to evaluate the feasibility of obtaining concurrent measures of event-related potentials (ERPs), and event-related magnetic feeds (ERPs). Subjects participated in an oddball task while simultaneous ERPs and ER's were recorded. Isocontour field maps generated for the P300 component are consistent with the suggestion that the P300 may be generated in, or men, the hippocampal formation. ABSTRACT:

\*ELECTROFNCE PHALDGRAPHY, \*ELECTROPHYSIOLOGY, \*INFORMATION PROCESSING, \*COGNITION, BRAIN, MAGNETIC FIELDS, HEPOCAMPUS, VISION, STRULI, COUNTING METHODS, DIPOLES, DISCRIMINATION, NDISE, REACTION TIME · MAGNETOENCE PHALOGRAMS 3 DESCRIPTORS:

\*Event related potentials, PEB1102F, IDENTIFIERS: (U) MUAF05R2313A4

12/1 AD-A169 972

NORTH CAROLINA UNIV AT CHAPEL HILL CENTER FOR STOCHASTIC PROCESSES

(U) Extremal Processes, Record Times and Strong Approximation.

Technical rept., DESCRIPTIVE NOTE:

DEC 85

Pfeifer, Dietmer PERSONAL AUTHORS:

TR-131 REPORT NO.

F49620-85-C-0144 CONTRACT NO.

2304 PROJECT NO.

¥ TASK NO.

TR-86-0340 AFOSR MONITOR:

## UNCLASSIFIED REPORT

variables (r.v.'s) with continuous cumulative distribution function (CDF) F, the author presents a simple construction for the jump times of an extremal process on the same probability space which 'interpolate' the given record times. This gives another approach to the strong approximation of extremal processes as developed by Deheuvels (1981, 1982, 1983), and allows for a more detailed investigation of the relationship between the ruscord times of the given sequence and the jump times of the extremal process. In particular, it is shown that the number S of surplus jump times of the record times is approximately Poisson distributed with an exact mean of E(S) = 1 - C, C denoting Euler's constant. Keywords: Poisson Given an 1.1.d. sequence of random approximation. (Author) 3 ABSTRACT:

DESCRIPTORS: (U) •APPROXIMATION(MATHEMATICS),
DISTRIBUTION FUNCTIONS, RANDON VARIABLES, INTERPOLATION,
PROBABILITY

WUAFOSR2304AB, PEB1102F 3 IDENTIFIERS:

AD-A168 878

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SEARCH CONTROL NO. EVN34M DTIC REPORT BIBLIOGRAPHY

13/61 11/2 AD-A188 971

BATTELLE COLUMBUS DIV OH

CONTINUED AD-A169 971 IDENTIFIERS: (U) PEG1102F, WUAFUSR2306A2

(U) Hot Isostatic Pressing of Ceramic Powder Compacts.

Final rapt. 1 Jun 84-31 Dec 85, DESCRIPTIVE NOTE:

1746 2 3 PERSONAL AUTHORS: McCoy, J. K. ; Markworth, A. J. ;

CONTRACT NO. AFOSR-82-0238

2306 PROJECT NO.

TASK NO

TR-88-0348 AFOSR MONITON:

# UNCLASSIFIED REPORT

ABSTRACT: (U) The densification of aluminum oxide in hot isostatic pressing has been studied in detail. Nethods for calculating amos of densification rate as function of temperature and applied pressure have been developed. A new mechanism interface-reaction-controlled grain-boundary diffusion, has been found which describes the densification of high-purity, fine-grained (grain radius of 0.7 micrometers) aluminum oxide powder at temperatures up to 1423 K. Theoretics, models have been developed for this machanism for both the initial and final stages of densification. Standard geometries have been used for the models; the initial stage is described in terms of isolated pores. The theoretical densities up to at least 0.9, although it breaks down for higher densities. From these theoretical studies of final stage, we find indications that the discrepancy between theory and experiment is due at least in part to neglect of the effects of a distribution of pore sizes. ABSTRACT:

DESCRIPTORS: (U) \*CERANIC MATERIALS, \*POWDERS, \*ISOSTATIC PRESSING, \*HOT PRESSING, ALUMINUM OXIDES, COMPACTING, TEMPERATURE, PRESSURE, GRAIN BOUNDARIES, SOLUTES, DIFFUSION, FINE GRAINED MATERIALS, DENSITY, RATES, MAPS. MODEL THEORY

AD-A186 971

AD-A169 971

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# SEARCH CONTROL NO. EVN34M DIIC REPORT BIBLIDGEAPHY

AD-A188 870

FLORIDA STATE UNIV TALLAHASSEE DEPT OF STATISTICS

(U) A Magative Result About Some Concepts of Negative Dependence.

Technical rept., DESCRIPTIVE NOTE:

Joag-Dev, Kumar ; Proschan, Frank ; PERSONAL ALTHORS:

F49620-85-C-0007 CONTRACT NO.

2304 PROJECT NO.

Ş TASK NO.

TR 86-0454 AFOSR MONITOR:

UNCLASSIFIED REPORT

ISTRACT: (U) It seems that either a very strong negative dependence holds with the manatonicity condition while without it, even a somewhat weak condition does not noid. This brings out the crucial role played by the PF2 (log concave density) property in conditional negative. ABSTRACT: (U) dependence.

STRIFTORS: (U) \*FANDOM VARIABLES, \*DISTRIBUTION: PROBABILITY, REAL MANGERS DESCRIPTORS:

DENTIFIERS: (U) \*Negative dependance, Conditional distribution, WUAFDSR2304AS, PEB1102F IDENTIFIERS: (U)

12/1 AD-A169 968 PITTSBURGH UNIV PA CENTER FOR MULTIVARIATE ANALYSIS

Dependent Distributions and Tests for Independence in Two-Way Contingency Tables. A Structure Theorem on B.variate Positive Quadrant 3

DESCRIPTIVE NOTE: Technical rept.,

626 OEC 85

Rao, M. B. ;Krishnaiah, P. R. PERSONAL AUTHORS:

Subramanyam, K.;

TR-85-48 REPORT NO.

F49620-85-C-00C8 CONTRACT NO.

2304 PROJECT NO.

TASK NO.

AF0SR TR-88-0344 MONITOR:

## UNCLASSIFIED REPORT

Marginals is shown to be compact and convex. Extreme points of this convex set are enumerated in some specific examples. Applications are given in testing the hypoth, sis of independence against itrict positive quadrant dependence in the context of ordinal contingency tables. Various procedures based upon certain functions for testing for independence in two-way contingency table. The performance of some tests one of which is based on eigenvalues of a random matrix is compared. of the eigenvalues of a random matrix are also proposed ISTRACT: (U) In this paper, the set of all bivariate positive quadrant dependent distributions with fixed ABSTRACT:

SCRIPTORS: (U) \*BIVARIATE ANALYSIS, THEOREMS, DISTRIBUTION FUNCTIONS, EIGENVALUES, HYPOTHESES, ASYMPTOTIC SERIES, RANDOM VAFIABLES DESCRIPTORS:

IDENTIFIERS: (U) Positive quadrant dependent distributions, Asymptotic distributions, Compact sets, Convex sets, Contingency tables, Power functions, Hypothesis of independence, NUAFOSR2304A5, PE61102F

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SEARCH CONTROL NO. EVN34M DIIC REPORT BIBLIOGRAPHY

> 20/3 AD-A166 864

WESTIMM-HOUSE RESEARCH AND DEVELOPMENT CENTER PITTSBURGH

(U) Migh Specific Heat Dielectrics and Kapit's Resistance at Dielectric Boundaries.

Annual rept. 1 Aug 83-30 Sep 85, DESCRIPTIVE NOTE:

\*\*ESCRIPTORS: (U) \*\*LIQUID HELIUM, \*THERUAL COMPUCTIVITY, \*THERNAL RESISTANCE, BEHAVIOR, BOUNDARIES, COMDUCTIVITY, COOLING, COPPER, DEMAGNETIZATION, DEWAR FLASKS, DIELECTRICS, HEATING, HIGH TEMPERATURE, LIMITATIONS, MAGNETIC FIELDS, MACKTIZATION, PARMAGNETISM, PHONONS, RAILATION, RANGE (EXTREMES), SPECIFIC HEAT, SPINEL, TEMPERATURE, TEST FACILITIES, THERMAL PROPERTIES, POTASSIUM COMPOUNDS, BROWIDES, LITHIUM FLUORIDES, ZINC COMPOUNDS, CADMIUM COMPOUNDS

\*Kapitza resistance, Helium 2,

WUAF0SR2301A7, PEB1102F

IDENTIFIERS: (U)

explain some of the magnetocaloric effects in the new spinels, CdCr204 and ZnCr204.

DESCRIPTORS:

CONTINUED

AD-A189 964

4170 SEP 85 PERSONAL AUTHORS: Eckels, P. W. ; Lavless, W. N. ; Parker, J. H. , Jr.; Patton, B. R. ; Clark, C. F. ;

F49620-83-C-0128 CONTRACT NO

2301 PROJECT NO.

**A**7 TASK NO.

AF OSR MONITOR:

TR-86-0477

## UNCLASSIFIED REPORT

thermal properties studies. Two separate Kapitza and thermal properties studies. Two separate Kapitza Conductance test facilities have been designed and few loaded for solid liquid HE Jasturements. Preliminary data has been obtained for Jasturements. Preliminary data has been obtained for Jasture to Tlambda C lambda interface conductance and Jasturements. For the latter two materials, the test devers were designed to allow clambinals, the test devers were hasten two proxon radiation limit providing strong evidence the proxon radiation limit providing strong evidence that the anomalous Kapitza conductance of both samples was very near the proxon radiation limit providing strong evidence that the anomalous Kapitza conductance is not the result of surface for samination. Thermal properties work has ponductivity of the CGCr204 spinels and of saveral CSC lambda structure heavy mater halleds in the temperature spinels will be contributions. The dependence of the spinels and thermal conductivity on magnetic fields up to 18T was thermal conductivity on magnetic fields up to 18T was thermal conductivity on magnetic fields up to 18T was studied and angentocaloric data has been obtained. For both the Zn and Cd spinels, the latter results showed a paramagnetic behavior with demagnetization cooling and magnetization heating. Theory has been developed to

AD-A188 864

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DTIC REPORT BIBLIDGRAPHY SEARCH CONTROL NO. SVN34M

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AD-A169 963

AD-A109 963 0/11 18/3

MACKAY SCHOOL OF MINES REND NY SEISMOLOGICAL LAB

(U) Attenuation in the Western Great Basin.

DESCRIPTIVE NUTE: Final rept. 1 Oct 84-30 Jun 85,

FEB 86 122P

PERSONAL AUTHORS: Priestley, Keith;

IDENTIFIERS: (U) Great Basin Province, Seismic velocity, Calderas, Upper mantle, Seismic magnitude, Nevada Test Site, PESI101F

ATTENUATION, ANDMALIES, SEISMIC DATA, DELAY, NUCLEAR EXPLOSION TESTING, YIELD(NUCLEAR EXPLOSIONS), ESTIMATES, SPECTRA, SOURCES, NUCLEAR EXPLOSION DETECTION, EARTHQUAKES, BASINS(GEOGRAPHIC), NEVADA, CALIFORNIA,

REPRINTS

CONTRACT NO. F48620-83-C-0012, ARPA Order-4397

MONITOR: AFCSR TR 88-0375

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## UNCLASSIFIED REPORT

the vicinity of the Central Nevada Test Site in Hot Creek Valley AV. With P-delay data over a wider region in the Great Basin we found that upper mantle speeds under Hot Creek Valley stations are higher than the average for the Great Basin as a whole, but lower than the average for the Great Basin as a whole, but lower than these beneath Pahute Mess. These observations indicate that the calders complex in Not Creek Valley may have a high speed root similar to that proposed to exist beneath the Silent Creek Valley anomaly is not as strong as the Pahute Mess anomaly. The shadow zone caused by the Fahute Mess attracture is much more pronounced and consequently magnitudes of Pahute mess astrong as the Pahute Mess structure is much more pronounced and consequently magnitudes of Pahute mess a structure of Pahute mess astronguistic of the Masmoth Lakes sarthquakes sequence have been determined for the frequency range 0.1-10.0 Hz. Including the M sub L & earthquakes at 1450 UI on May 27, 1880. We have found mothing in the spectra of this event noor in the spectra of the aftershocks to distinguish them from spectra of the cound mothing in the spectra of the service mechanism caserved in moment tensor inversion and first motion data for the largest events of the Masmoth Lakes earthquake sequence. Journal reprints are included as

DESCRIPTORS: (U) \*PRIMARY WAYES(SEISMIC WAVES), \*STRUCTURAL GEOLOGY, \*EARTH CRUST, EARTH MANTLE, VELOCITY,

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# DITIC REPORT BIBLIDGRAPHY SEARCH CONTROL NO. EVN34M

AD-A169 960 20/5

ILLINDIS UNIV AT URBANA CHARGED PARTICLE RESEARCH LAB

Optical Pumping of High Power Lasers with an Array of Plasma Pinches

DESCRIPTIVE NOTE: Final rept. 1 Nov 81-31 Oct 84,

APR 86 31P

PERSONAL AUTHORS: Kim, Kyekyoon K.;

CONTRACT NO. AFOSR-82-0017

PROJECT NO. 2301

TASK NO. AS

MONITOR: AFOSR TR-86-0479

# UNCLASSIFIED REPORT

hypocycloidal pinch and the Mather type were investigated as the potential excitation light sources for high energy. Short wavelength lasers. Using the hypocycloidal pinch extensive lasing experiments were successfully performed, for the first time, on organic dyes producing results indicative of the capabilities and limitations the HCP system as an optical pump. A proof of principle lasing experiment was also performed for the first time using the Mather type dense plasma focus (MDP) successfully successfully feaults thus fare indicate that both HCP and MDP are excellent high energy, short wavelength optical pumps and that as an optical pump, the MDP system, specially in the short wavelength spectral region.

DESCRIPTORS: (U) \*OPTICAL PUMPING, \*PINCH EFFECT, \*DYE LASERS, DENSITY, DYES, EXCITATION, FOCUSING, HIGH ENERGY, HIGH POWER, LIGHT SOURCES, ORGANIC COMPOUNDS, PLASMAS(PH.SICS), SHORT WAVELENGTHS

DENTIFIERS: (U) -Blue green lasers, HCP(Hypocycloidal Pinch), MDPF(Matter-type Dense Plasma Focus), Laser dyc 480, Rhodamine dG dye, Coumarin 480 dye, Coumarin 504 dye, PEG1102F, WUAFOSR230148

AD-A169 960

AD-A169 959 12/2

NORTH CAROLINA UNIV AT CHAPEL HILL CURRICULUM IN OPERATIONS RESEARCH AND SYSTEMS ANALYSIS

(U) Maximum Flow and Critical Cutset as Descriptors of Multi-State Systems with Randomly Capacitated Components.

DESCRIPTIVE NOTE: Technical rept.

MAR 86 3

PERSONAL AUTHORS: Fishman, George S. ;

REPORT NO. UNC/ORSA/TR-86-/1

CONTRACT NO. AFOSR-84-C140

PROJECT NO. 2304

TASK NO. AS

MONITOR: AFOSR TR-66-0355

## UNCLASSIFIED REPORT

ABSTRACT: (U) Let G = (V,E.s,t) denote a directed nativork with node set V, and set E = (1,...,n), source node s and sink node t. Let gazza denote the set of all minimal s-t cutsets and \$1 (fau), ..., Bn(tau), the probability distribution function. Let lambda (fau) denote the maximum s-t flow at time tau and D(tau) the corresponding critical minimal s-t cutset. Let omega denote a set of minimal s-t cutsets. Let omega a comprehensive Monte Carlo sampling plan for efficiently estimating the probability that D (fau) epsilon cmega subset of gamma and x < lambda (fau) < or = y at time tau and the probability that D (tau) epsilon omega given that x < lambda (tau) < or = y at time tau and the probability that D (tau) epsilon omega given that the probability that I much a eatimating or = y at time tau. The proposed method makes use of a readily obtainable upper bound on the probability that lambda (tau) < or = y at time tau. The proposed method makes use of a readily obtainable upper bound on the probability that lambda (tau) < or = y at time tau. The proposed method makes use of a readily obtainable upper bound on the probability that lambda (tau) < or = y at time tau and x < lambda (tau) < or = y at time tau. The proposed method makes use of a readily obtainable upper bound on the Monte Carlo sampling experiment, an example to ming illustrate the technique and a listing of all steps

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# SEARCH CONTROL NO. EVN34M DTIC REPURT BIBLIDGRAPHY

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12/1 AD-A169 958

> implementation. (Author) reeded for

NORTH CAROLINA UNIV AT CHAPEL HILL CENTER FOR STOCHASTIC PROCESSES

DESCRIPTORS: (U) \*NETWORK PLOWS, \*MONTE CARLO METHOD. \*SAMPLING, ALCORITIMS, ESTIMATES, RELIABILITY, PROBABILITY DISTRIBUTION FUNCTIONS, NODES, COMPUTATIONS, CONFIDENCE LIMITS.

PEG1102F, WUAFDSR2304AS

3

IDENTIFIERS:

(U) Norparametric Sequential Estimation of Zeros and Extrema of Regression functions.

DESCRIPTIVE NOTE: Technical rept.,

2AN 86

Haerdle, Volfgang PERSONAL AUTHORS:

TR- 133 REPORT NO.

F49820-85-C-0144 CONTRACT NO.

2304 PROJECT NO.

TASK NO.

AF0SR TR-89-0400 MONITOR:

# UNCLASSIFIED REPORT

BSTRACT: (U) Let (X,Y), (X sub 1, Y sub 1), (X sub 2, Y sub 2, ... be independent, identically distributed, bivariate random variables and let m(x)=E(Y/x=x) be the regression curve of y on X. This paper considers the estimation of zeros and extreme of the regression curve via stochastic approximation methods. The author presents consistency results of some sequential procedures and define termination rules providing fixed width confidence intervals for the parameters to be estimated. Keyworcs: kernel regression; nonparametric regression. (Author) ABSTRACT: (U)

\*ESTIMATES, \*APPROXIMATION(MATHEMATICS), \*NONPARAMETRIC STATISTICS, REGRESSION ANALYSIS, DISTRIBUTION CURVES, RANDOM VARIABLES, BIVARIATE ANALYSIS, SEQUENCES (MATHEMATICS), STOCHASTIC PROCESSES, KERNEL DESCRIPTORS: (U)

PEBI102F, WUAFDSR2304A5 IDENTIFIERS: (U)

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# SEARCH CONTROL NO. EVN34M DIIC REPORT BIBLIDGRAPHY

PITTSBURGH UNIV PA INST FOR COMPUTATIONAL MATHEMATICS AND

APPL ICATIONS

12/1

AD-A169 955

Estimation of the Error in the Reduced Basis Wethod

Solution of Nonlinear Equations,

PERSONAL AUTHORS: Porsching, T. A. ;

<u>=</u>

OCT 85

AF0SR-80-0176

CONTRACT NO.

PROJECT NO.

COLORADO STATE UNIV FORT COLLINS COLL OF VETERINARY IN TICINE AND BIONEDICAL SCIENCES 9 10 AD-A166 957

Characterization of the Sites Phosphorylated on Tyrosica Hydroxylase by Ca(2+) and Phospho ipid-Dependent Protein Kinase, Calactalin-Dependent Multiprotein Kinase and Cyclic AMP-Dependent Protein Kinss

8

Vulliet, P. R. ; Woodgett, James R. ; Ferrari, Stefano ; Hardie, D. G. ; PERSONAL AUTHORS:

AF05R-84-0122 CONTRACT NO.

2312

PROJECT NO.

< TASK ND.

TR-86-0450 FOSH HOMITOR:

UNCLASSIFIED REPORT

Pub. in FEBS Letters, vif2 n2 p335-SUPPLEMENTARY NOTE:

338 Mar 85

phosphory ation sites on tyrosine hydroxylass, the rate limiting enzyme in the biosynthesis of the catecholamina neurotransmitters. The phosphorylation of the enzyme by the calcium and phospholipid dependent protein kinase () is established and it is reported that both protein kinase () as established and it is reported that kinase cand cyclic AMP dependent protein kinase cand cyclic AMP dependent protein kinase cand cyclic AMP dependent protein kinase phosphorylate the identical site on the enzyme. Inis communication identifies the 9 ABSTRACT:

DESCRIPTORS

KENTIFIERS (U) \*Kinasas, Calmodulin, AMP(Adenosina Monophosphata), Cyclic AMP, PE81102F, WUAFCSR2312A1

**IDENTIFIERS** 

UNCLASSIFIED REPORT

TR-88-0473

AFOSR

MONITOR: TASK NO.

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SUPPLEMENTARY NOTE: Pub. in Mathematics of Computation, v48 n172 p487-498 Oct 85.

technique for approximating the solution curve of a finite system of nonlinear algebraic equations by the solution curve of a related system that is typically of much lower dimension. In this paper, the reduced basis error is shown to be dominated by an approximation error. This, in turn, leads to error estimates for projection. onto specific subspaces; for example, subspaces related to Taylor, Lagrange and discrete least-squares The reduced basis method is a projection approximation. (Author) Ξ ABSTRACT:

DESCRIPTORS: (U) \*PROJECTIVE TECHNIQUES, \*ESTIMATES, NONLINEAR ALGEBRAIC EQUATIONS, CURVATURE, FRROHS. APPROXIMATION(MATHEMATICS), REPRINTS

\*Reduced basis method, PE61102F, Ξ MUAF0SR2304A3 IDENTIFIERS:

AD-A169 957

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# SEARCH CONTROL NO. EVN34M DIIC REPURT BIBLIOGRAPHY

AD-A166 853

PITTSBURGH UNIV PA DEPT OF MATHEMATICS AND STATISTICS

Moving Average Models with Bivariate Exponential and Geometric Distributions.

DESCRIPTIVE NOTE: Technical rept.

2

PERSONAL AITHORS: Langberg, Naftali A.; Stoffer, David S.

TR-85-02 REPORT NO. AF0SR-84-0113 CONTRACT NO

2304 PROJECT NO.

TASK NO.

TR - 86-0409 AF OSR HONITOR:

## UNCLASSIFIED REPORT

manginals while the arcord class has bivariate geometric manginals. The theory of positive dependence is used to show that in various cases the two classes consist of associated random variables. Association is then applied to establish moment inequalities and to obtain ABSTRACT: (U) Two classes of finite and infinite moving average sequences of bivariate random vectors are considered. The first class has bivariate exponential Approximations to some joint probabilities of the bivariate processes. (Author)

FECRIPTORS: (U) \*STATISTICAL DISTRIBUTIONS.
\*SEQUENCES: WATHEMATICS), \*MACHEMATICAL MODELS, BIVARIATE
ANALYSIS, RANDOM VAKIABLES, APPROXIMATION:(MATHEMATICS),
GEOMETRY, EXPONENTIAL FUNCTIONS DESCRIPTORS:

\*Moving average models, PE61102F IDENTIFIERS (U) WUAF0SR2304A5

AD-A168 950

12/1

CALIFORNIA UNIV LOS ANGELES DEPT OF ELECTRICAL ENGINEERING (U) A Mathematical Formulation of a Large Space Structure Control Problem.

DESCRIPTIVE NOTE: Interim rept.,

SEP 85

PERSONAL AUTHORS: Balakrishnan, A. V.;

AF05R-83-0318 CONTRACT NO.

9769 PROJECT NO.

5 TASK NO.

TR-88-0444 Ar OSR MONITOR:

# UNCLASSIFIED MEPORT

ABSTRACT: (U) This paper presents an abstract-mathematical formulation of a Large Spuce Structure Control problem. The physical apparatus consists of a softly supported antenna attached to the space shuttle by a flexible beam-like truss. The control objective is to slew the cntenna on command within the given accuracy and maintaining stability. The control forces and torques are applied at the shuttle end as well as the antenna end and in addition provision is made for a small number or 2-in addition provision is made for a small mumber or 2-in modelled by partial differential equations. Of the variety of Control problems possible we touch only on the time-optimal probable. (Author)

DESCRIPTORS: (U) \*CONTROL SYSTEMS, \*SPACE SHUTTLES, \*APPLIED MATHEMATICS, EQUATIONS OF MOTION, HILBERT SPACE, ANTENNAS, TRUSSES, DAMPING, PARTIAL DIFFERENTIAL EQUATIONS

WUAFOSRB76801, PEB1102F IDENTIFIERS: (U)

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DITIC REPORT BIBLIDGRAPHY SEARCH CONTROL NO. EVN34M

AD-A168 848 11/6 20/11

MASSACHISETTS INST OF TECH CAMBRIDGE DEPT OF AERONAUTICS AND ASTACHMANTICS

(U) Finite Element and Experimental Studies of Greep Grack Initiation of REME-88 Superalloy.

DESCRIPTIVE NOTE: Final rept. 1 Sep 82-28 Feb 85

FEB 85 62P

PERSONAL AUTHORS: Plan, Theodore H. ; Sifre, Pedro J. ; Lee, Michael J.

CONTRACT NO AFOSR-82-0320

PROJECT NO 2307

TASK NO. B2

MONITOR: AFOSR TR-88-0488

# UNCLASSIFIED REPORT

ABSTRACT: (U) A study was made of crack initiation due to localized Greep action for a nickel-base superalloy REME 99 Crack initiation them of single-edge-notched REME 99 Crack initiation times of single-edge-notched REME 99 Crack initiation times of single-edge-notched specialists were determined experimentally under constant loads and a given elevated temperature. Corresponding leafers a leasn to allocate using assumed stress hybrid elements were made to determine the stress and strain histories up to the crack initiation times. Through the study of specimens with notches of different geometries at different loading levels a large range of stress and strain parameters were covered. It has been tound that the only parameter that falls on a narrow band when plotted against the initiation time is the magnitude of maximus equivalent stress at the time of crack initiation.

DESCRIPTORS: (U) \*NICKEL ALLOYS, \*SUPERALLOYS, \*CREEP.
\*CRACKINAT (FRACTURING), RUPTURE, CRACK PROPAGATION, NOTCH
SENSITIVITY, LOADS(FORCES), HIGH TEMPERATURE, STRESSES,
STRAIN(MECHANICS), FINITE ELEMENT ANALYSIS

INTERTIFIERS. (U) MICKET BITOY RENE 95, PEG1102F

AD-A168 841 6/8 8/

D-4168 841 6/8 8/18 ESSEX CORP ORLANDO FL (U) Eye Movements as an Index of Mental Workload.

DESCRIPTIVE NOTE: Final rept. 18 Jul 85-14 Mar 88 on Phase 1,

MAR 16 20P

PERSONAL AUTHORS: May, James G. ; Kernedy, Robert S. ; Williams, Mary C. ; Dunlap, Milliam P. ; Brannan, Julie R. ;

CONTRACT NO. F48620-85-C-0121

PROJECT NO. 3005

TASK NO. A1

MONITOR, AFOSR TR-88-0418

# UNCLASSIFIED REPORT

ABSTRACT: (U) Two investigations were carried out to assess the feasibility of using eye movement measures as nonintrustive indicants of mental workload. In the first experiment, measures of second latency and eye movement velocity were obtained during alternating eye movement scans while subjects were differentially task loaded by simple, moderate, and complex auditory tone counting. The latency and eye movement velocity measures changed but did not differ reliably as tone counting complexity tworkload) was increased. In the second experiment, the epatial extent of spontaneous saccades was measured under three levels of tone counting complexity. The results indicated that the extent of such eye movements varied increased. This index appears to hold promise for the development of an objective indicator of mental workload. Author)

DESCRIPTORS: (U) \*EYE HOVEMENTS, \*MENTAL ABILITY, AUDIO TONES, COUNTING METHODS, HEARING, INDEXES, INDICATORS, INFRARED TRACKING, PERFORMANCE(HJMAN), SCAMMING, VELOCITY, WORKLOAD

IDENTIFIERS: (U) MUNFOSR3005A1, PEB1102F

AD-A169 948

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# SEARCH CONTROL NO. EVN34M DTIC REPORT BIBLIDGRAPHY

ARIZONA UNIV TUCSON DEPT OF NATHENATICS 12/1 NO-A188 840

(U) Ordering Distributions by Scaled Order Statistics.

Technical rept., DESCRIPTIVE NOTE:

13

Scarsini, Marco ; Shaked, Moshe ; PERSONAL AUTHORS:

AF05R-84-0250 CONTINCT NO.

PROJECT NO.

AF USR TASK NO. MONITOR:

2

TR-86-0354

# UNCLASSIFIED REPORT

y such n for all choices of a such 1 > 0, 1 + 1, 2, ... n. theory, we define a preordering of normagative random vectors by requiring a to be stochastically smaller than the k th order statintid of a sub 1 y sub 1. Motivated by applications in reliability 3 ABSTRACT:

DESCRIPTORS: (U) \*ORDER STATISTICS, DISTRIBUTION, STOCHASTIC PROCESSES, RELIABILITY, VECTOR ANALYSIS

WUAF0SR2304AB, PEB1102F IDENTIFIERS: (U)

12/1 AD-A169 839 SOUTH CAROLINA UNIV COLUMBIA DEPT OF STATISTICS

(U) A Morperametric Quantile Estimator: Computation

Technical rept., DESCAIPTIVE MOTE:

2 ¥ PERSONAL AUTHORS: Padgett, M. J.

TR-117, 62005-9 REPORT NO. AFUSR-84-0186, MIPR-ARC-139-88 CONTRACT NO.

2304 PROJECT NO.

TASK NO.

AF0SR TR-86-7360 HONITOR:

## UNCLASSIFIED REPORT

ABSTRACT: (U) Right-censored data arise very naturally in life testing and reliability studies. For such data, it is important to be able to obtain good norparametric estimates of various characteristics of the unknown lifetima distribution. This report concerns the computational procedure for a kernel-type norparametric estimator of the quartile function of the lifetime distribution from right-censored data. This estimator was suggested by Padgett (1888), extending the complete sample results of Yang (1888). The large sample properties of the estimator, such as asymptotic normality and mean square convergence, were studied by Lio, Padgett and Yu (1888) and by Lio and Padgett (1885). In this quantile estimate from right-censored data is described, report. a procedure for calculation of the kernel-type and a listing of a computer program in FORTRAN code is ABSTRACT: provided.

DESCRIPTORS: (U) \*ESTIMATES, \*NOMPARAMETRIC STATISTICS, COMPUTATIONS, BANDMIDTH, COMPUTER PROGRAMS, FORTRAN, BIAS, CONFIDENCE LIMITS

Swoothing(Mathematics), Bootstrap mathod, WUAFUSR2304A5, PEB1102F Quantille functions. e) DENTIFIERS:

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AD- A188 840

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# SKARCH CONTROL NO. EVN34M DITC REPORT BIBLIDGRAPHY

A6-A188 838

ARIZONA UNIV TUCSON

(U) Inequalities for Propability Contents of Convex Sets via Geometric Average.

DESCRIPTIVE NOTE: Technical rept.,

= 3

PERSONAL AUTHORS: Shaked, Noshe ; Tong, Y. L.

AF058-84-0206, NSF-MCS82-00098 CONTRACT NO

305 PIDATCT NO.

Ş TASK 10.

TR - 86-0388 AF OSR HONITOR:

# UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Prepared in cooperation with Georgia Inst. of Tech., Atlanta, Granta NSF-MCS81-00776 and NSF-DMS88-02346

spherically symmetric. The class of convex sets considered includes D sub infinity and D sub 2 as special cases and special applications are given for elliptically cuntoured distributions and scale parameters families. In all thase cases, universal upper bounds on the probability contents can be given by substituting the values of the a sub i's by their geometric mean. STRACT: (U) This paper derives such an inequality for a large class of density functions and a large class for convex sets. The most general results are given for the Blvariate case. An extension to the n-disensional case appears to be difficult except for some special cases. such as the case of independent identically distributed random variables or when the underlying joint density is **STRACT:** 

ESCHIFIUMS (U) \*INEQUALITIES, PROBABILITY, CONVEX SETS, DENSITY, BIVARIATE ANALYSIS, PERMITATIONS, INVARIANCE, RANDOM VARIABLES DESCRIPTORS

\*Density functions, Schur concavity WUAFOSR2304AS, PEG1102F 5 DENTIFIERS

AD-A188 938

12/1 AD-A188 837 MARYLAND UNIV COLLEGE PARK DEPT OF MATHEMATICS

(U) Zero-Crossings Analysis.

Technical rept., DESCRIPTIVE NOTE:

11 NY

PERSONAL AUTHORS: Kedem, Benjamin;

CONTRACT NO. AFOSR-82-0187

2304 PROJECT NO.

TASK NO.

AF0SR TR-86-0413 MONITOR.

## UNCLASSIFIED REPORT

ABSTRACT: (U) A coherent wavelopment of zero crossing based methods and theory appropriate for fast signal analysis are advanced. Guite a few ideas pertaining to zero crossing counts found in the literature can be expressed and interpreted with the help of this more general setup. A central issue addressed in some detail, is the fruitful connection which exists between zero crossing socurts and linear filtering. This connection is explored and interpreted with the help of a certain zero crossing spectral representation, is then applied in spectral analysis, detection and discrimination. Zero crossing counts in filtered time series are called higher order crossings. The thrue of the work is that higher order crossings analysis provides a useful descriptive as well as analytical tool that can in many respects match spectral analysis. To a great extent these two types of analysis are in fact equivalent, but each emphasizes a different point of view. Advantages offered by higher order crossings are great simplicity and a drastic date reduction. ALSTRACT:

SCRIPTORS: (U) \*DETECTION, \*TIME SERIES ANALYSIS, \*SPECTRUM ANALYSIS, \*CROSSINGS, COMERENCE, DATA REDUCTION, FILTERS, LINEAR FILTER:M., SIGNALS DESCRIPTORS: (U)

WUAF05R2304AB, PEB1102F IDENTIFIERS: (U)

AD-A169 937

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# DTIC REPORT BIBLIDGRAPHY SEARCH CONTROL NC. EVN34M

AD-A188 836 20/8 20/7
COLORADO UNIV AT BOULDER CO DEPT OF ASTROPHYSICAL SCIENCE

(U) Ion Transport in Bear-Plasma Interactions.

DESCRIPTIVE NOTE: Final rept. 30 Sep 83-28 Mar 85

MAY 85 12P

PERSONAL AUTHORS: Stern, R. A. ;

REPORT NO. 153-323-F

CONTRACT NO. AFOSR-83-0328

MONITOR: AFOSR TR-88-0423 UNCLASSIFIED REPORT

ABSTRACT: (U) The project is concerned with the interaction of ion beams and plasmas, and their mutual destablishment on their motual destablishment on using novel diagnostic techniques. In the experiment, a gas discharge plasma was to be constructed through which ions could be accelerated. A two laser system would be assembled and variations of laser induced fluorescence (LIF) diagnostics used to measures the changes in ion properties of the beam and the plasma consequent on the instability.

DESCRIPTORS: (U) \*ION BEAMS, \*PLASMA DIAGNOSTICS, PRAMS(RADIATION), DIAGNOSIS(GENERAL), GAS DISCHARGES, ANTERACTICAIS, ION EXCHANGE, IONS, PLASMAS(PHYSICS), TRANSPORT PROPERTIES, LASER INDUCED FLUORESCENCE

IDENTIFIERS: (U) Plasma instabilities

AD-A169 935 12/1

SOUTH CARGLINA UNIV COLUMBIA DEPT OF STATISTICS

U) Smooth Norperametric Quantile Estimation under Censoring: Simulations and Bootstrap Methods.

DESCRIPTIVE NOTE: Technical rept.,

MAY 86 2

PERSONAL AUTHORS: Padgett, W. J. ; Thombs, L. A. ;

REPORT NO. TR-118, 82NO5-17

CONTRACT NO. AFOSR-84-0156, MIPR-ARD-139-85

PROJECT NO. 2304

TASK NO. AS

MONITOR: AFOSR TR-88-0431

# UNCLASSIFIED REPORT

Under the control of this paper are two-fold. One is to report results of extensive Monte Carlo simulations which demonstrate the behavior of the mean squared error of the Kernel estimator with respect to bandwidth. These simulations provide a method of choosing an optimal bandwidth when the form of the lifetime and censoring distributions are known. Also, they compare the kernel type estimator with the product-limit quantile estimator. Five commonly used parametric lifetime distributions, two censoring mechanisms, and four different kernel functions are considered in this study, which is an extension of the brief simulations for exponential distributions reported by Padgett (1986). The second objective is to present a nonparametric method for expension and modification of the methods proposed by Padgett. Bandwidth selection using the bootstrap is important for small and moderately large samples since no exact expressions exist for the mean squared error of the kernel-type quantile estimator.

DESCRIPTORS: (U) \*ESTIMATES, \*NOMPARAMETRIC STATISTICS,

AD-A169 935

AD-A188 838

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# DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVISAN

AD-A100 B35 CONTINUED

MONTE CARLO METHOD, ASYMPTOTIC HORMALITY, KERNEL PUNCTIONS, BANDWIOTH, CONTIDENCE LIMITS

IDDIVIFIERS (U) \*Quantile functions, Bootstrap mathod, Smooth: - mathematic), Lifetiae distribution, MUATOSR, :0448, PE61102F

AD-A168 834 8/10 8

NEW YORK UNIV N Y

(U) Perceptual Factors in Workload: A Nauromagnetic Study.

DESCRIPTIVE NOTE: Armual rept. no. 1, 1 Jan-31 Dec 85,

FEB 80 55P

PERSONAL AUTHORS: Kaufman, Lloyd; Williamson, Samusi J.;

CONTRACT NO. F48620-88-K-0004

PROJECT NO. 2313

TASK NO. A4

MXMITOR: AFOSR TR-86-0417

## UNCLASSIFIED REPORT

ABSTRACT: (U) A background section describes the neurosegnatic method and its history. There were an elevation of Ni and P2 (using a quasi-steady state stimulus). The fields associated with these sources increased in intensity during attention. This is not due to the activity of sources recruited during attention, but to Modulated activity of neurons in or near primary anditory cortex. This is consistent with a Triesman like filter theory of attention. Also, physical paramsters of stimulation, e.g., loudness, have little or no effects. However, the effect is sharply diminished when both stimulation with other investigators is planned to compare our results with other investigators is planned to compare our results with other investigators is planned to conventional manner. A new method for obtaining graded levels of attention is described. A visual experiment is underway, and is giving us similar results. A single-position method for determining the location, orientation and strength of the dipole source is described. This method will be applied to a P300 study, which will follow a modd-ball study just completed. The latter gave results similar to those obtained praviously, but the method is sufficiently insensitive to determine if changing P300 latency is due to a change in source. The planned experiment should make this possible.

DESCRIPTORS: (U) \*ATTENTION, \*HEARING, \*NEUROPHYSIOLOGY,

AD-A169 934

# \* DTIC REPORT BIBLIDGRAPHY SEARCH CONTROL NO. EVN34N

AD-A100 834 CONTINUED

\*MADETDEPFERMALDGRANS, DIPOLES, L'JUDNESS, PERCEPTION, SOUNCES, STRUKLOAD, MAGNETOMETERS, ELECTROEM YOU ALCORAPHY, COMPUTER APPLICATIONS, TOMOGRAPHY MAGNETIC FORMANCE, IMAGE PROCESSING, NERVE TRANSMISSION, ALDITORY PERCEPTION

IDENTIFIERS: (U) Neuromagnetima, Event related potentials, MUAFOSR2313A4, Pf81102F

AD-A168 833 7/4

TORONTO UNIV (ONTARIO) LASH MILLER CHEMICAL LABS

(U) Study in Molecular Lasers.

DESCRIPTIVE NOTE: Final rept. 1 Jun 84-31 May 85,

AUQ 88

PERSONAL' AUTHORS: Burns, George;

CONTRACT NO. AFOSR-84-0127

PROJECT NO. 2303

TASK NG. B1

MONITOR: AFOSR TR-88-0422

## UNCLASSIFIED REPORT

ABSTRACT: (U) Principal progress was achieved in the field classical studies of distom dissociation. 3-D first classical studies of dissociating browns and fluorine were conducted over a range of temperatures, and using several significantly different potential energy surfaces. A library consisting over a two million trajectories was accumulated. These trajectories were used to test the strong collision assumption, important in several theories of unimolecular reactions and in some thwories of thermal distom dissociation. The assumption was shown to be not valid for the case of dissociating brownine and fluorine. Properties of the steady state of dissociating distoms were investigated. Papers, now in preparation, involve study of nonequilibrium energy and angular momentum distribution functions; accumulation, interpretation and classification of data on inelastic and reactive collisions; and study of scaling factors and vibration rates of fluorine atoms. Time delayed recombination rates of fluorine atoms. Time delayed photoelectric effect was explained in terms of a release of trapped electrons at the surface of photocathode.

DESCRIPTORS: (U) \*DIATOMIC MOLECULES, \*CHEMICAL DISSOCIATION, \*RECOMBINATION REACTIONS, \*BROWINE, \*FLUORINE, TRAJECTORIES, THREE DIMENSIONAL, TEMPERATURE, POTENTIAL ENERGY, SURFACES, COLLISIONS, ELECTRON TRANSFER

AD-4159 933

DTIC REPORT BIBLIDGRAPHY SEARCH CONTROL NO. EVNOAM

AD-A166 523 CONTINUED

MOLECULAR VIBRATION, MOLECULAR ROTATION, PHOTOELECTRIC EFFECT, ARGON

IDDATELES (U) Atom molecule interactions, WLMF034230381, PER1102F

AD-A169 832 12/1

GEORGIA INST OF TECH ATLANTA

(U) Extreme Values of Birth and Death Processes and Queues,

MAR 88 28F

PERSONAL AUTHORS: Serfozo, Richard F.;

CONTRACT NO. AFOSR-84-0367

PROJECT NO. 2304

TASK NO. AS

HONITOR: AFOSR TR-86-0384

# UNCLASSIFIED REPORT

ABSTRACT: (U) This document studies the arymptotic behavior of maximum values of birth and death processes over large time intervals. In most cases, the distributions of these maxima, under standard linear normalizations, either do not converge or they converge to a degenerate distribution. However, by allowing the birth and death rates to vary in a certain manner as the time interval increases, we show that the maxima do indeed have three possible limit distributions. Two of these are classical extreme value distributions and the third one is a new distribution. This third distribution is the best one for practical applications. Our results are for transient as well as recurrent birth and death processes and related queues. For transient processes, the focus is on the maxima conditioned that they are finite. (Author)

DESCRIPTORS: (U) \*STATISTICAL DISTRIBUTIONS, \*TIME INTEPVALS, QUEUEING THEORY, VALUE, CONVERGENCE, ASYMPTOTIC NORMALITY

IDENTIFIERS: (U) \*Birth and death processes, WUAFDSR2304AS, PEB1102F

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AD-A189 932

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PAGE 145 EVN34M

# SEARCH CONTROL NO. EVN34M DIIC REPORT BIBLIOGRAPHY

PITTSBURGH UNIV PA CENTER FOR MULTIVARIATE ANALYSIS

12/1

AD-A168 831

Validity of Edgeworth Expansions of Minimum Constrast Estimators for Gaussian ARMA Processes. E

DESCRIPTIVE ROTE: Technical rept.,

96C 38

Taniguchi, Kasanobu; PERSONAL AUTHORS:

87-98-VI REPORT NO. F49620-45-C-0008 CONTRACT NO

2304

PROJECT NO.

Š TASK NO. ONITOR:

AF0SR TR-86-0398

# UNCLASSIFIED REPURT

likelihous mathod and the quasi-maximum likelihood ethod as special cases, let p-bar sub T be the minimum contrast estimator of p. Then we derive the Edgeworth expansion of the distribution of p-bar sub T up to third order, and provide its validity. By this Edgeworth expansion we can see that this minimum contrast estimator is always second-order as mototically seflicient in the class of second-order as spotically median unbiased estimators. Also the third-or-or asymptotic comparisons among minimum contrast estimators will be discussed. ISTRACT: (U) Let (X sub t) be a Gaussian Autoregression Multivariant Analysis (ABMA) process with Spectral density t sub p (lambda), where p is an unknown parameter. To ustimate multivariant analysis we propose a minimum contrast estimation method which includes the maximum

AMALYSIS CONTRAST, ESTIMATES, MAXIMUM LIKELIHOOD
ESTIMATISM, GAUSSIAM QUADMATURE, ASYMPTOTIC SERIES,
STOCHASTIC PROCESSES DESCRIPTORS

ENTIFIERS: (U) ARMA(Autoregression Multivariate Analyses), Edgeworth expansion, WUAFOSR2304AS, PERIIO2F DEMTIFIERS

AD-A189 931

9/3 AD-A169 830 MASSACHUSETTS UNIV AMPIERST DEPT OF ELECTRICAL AND COMPUTER ENGINEERING yield and Parformance Emhancement through Redundancy in VLSI and WSI Muiti-Precassor Systems. 3

DESCRIPTIVE NOTE: Technical rept.

9

PERSONAL AUTHORS: Koren, Israel ; Pradhan Dhiraj K.;

AFCSR-84-0052 CONTRACT NO.

2304 PROJECT NO.

7 TASK NO. AF0SR TR-86-0389 MONITOR:

UNCLASSIFIED REPORT

techniques. Fault-tolerance in these VLSI processor arrays is of real practical atgnificance; it provides for much-needed reliability improvement. Therefore, we first describe the underlying concepts of fault-tolerance at work in these sulti-processor systems. These precepts are useful to then present certain techniques that Will New challenges have been brought to fault-ABSTRACT: (U) New challenges have been brought to faulttolerant computing and processor architecture research
because of developments in IC technology. One emergent
area is development of architectures, built by
interconnecting a large number of processing elements on
a single chip or wafer. Two important areas, related to
a single chip or wafer. Two important areas, related to
such VLSI processor arrays, are the focus of this paper;
they are fault-tolerance, and yield improvement. incorporate fault-tolerance integrally into the design. In the second part of the paper we discuss models that evaluate how yield enhancement and reliability improvement may be achieved by certain fault-tolerant techniques. (Author)

\*FAULT TOLERANT COMPUTING ESCHIPTORS: (U) DESCRIPTORS:

VLSI(Very Large Scale Integration). WJAF0SR2304A2, PEB1102F IDENTIFIERS: (U)

AD-A169 930

148

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# DIIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN34M

AG-A189 929 9/2

MISCONSIN UNIV-MADISON, DEPT OF COMPUTER SCIENCES

(U) SOR (Successive Over-Relexation) MGR (Mu)tigrid Algorithm)(nu) Experiments on the Crystal Multicomputer,

JAN 80 48P

PERSONAL AUTHORS: Kamouttz, David;

CONTRACT NO AFOSR-82-0278, NSF-MCS81-05904

PROJECT 40 2304

TASK NO. A3

MONITOR: AFOSR TR-88-0411

# UNCLASSIFIED REPORT

ABSTRACT: (U) This report describes distributed implementations of the red/black SOR algorithm and of the Implementations of the implementation and observed efficiencies for both alignities are compared. Keynords: Distributed computing: Multigrid elgorithm, Successive overrelexation method.

DESCRIPTGRS: (U) \*ALGORITHES, \*MALTIPROCESSORS, BLACK(CC!OR), EFFICIENCY, LINEAR SYSTEMS, CONVERGENCE, RATES, PEDICOLDR), DIFFERENTIAL EQUATIONS, SOLUTIONS, TERRATIONS

IDENTIFIERS (U) -implementation, -multicomputers, WLAFOSR2304A3, PEG1102F

AD-A168 828 20/11 22/2

MASSACHUSETTS INST OF TECH CAMBRIDGE NA SPACE SYSTEMS LAB

(U) Development of Finite Active Control Elements for Large Flexible Space Structures.

DESCRIPTIVE NOTE: Annual rept. 18 Mar 83-14 May 84,

JUN 45 225P

PERSONAL AUTHORS: Miller, David W.; Cravley, Edward F.;

REPORT NO. MIT-SSL-6-88

CONTRACT, NO. F49820-83-K-0028

PROJECT NO. 2302

TASK NO. B1

MONITOR: AFOSR TR-86-0480

## UNCLASSIFIED REPORT

ABSTRACT: (U) A quasi free-free beam, simulating a flexible space structure, was equipped with inertial proof-mass actuators and sensors capable, in principle, of functioning in the space environment. Then tuning rules were derived which determine the optimal actuator passive stiffness and damping which minimizes the control passive stiffness and damping which minimizes the control seffort required while increasing the anotal damping in the structure. Active control using two local and one component level processor was demonstrated next. Lastly, multi-input, single output collocated feedback tests were performed. Optimal passive vibration absorber designs were derived to provide maximum structural damping. Theoretically, addition of an absorber mass equaling 0.5% of structural mass can result in a single mode structural damping ratio of 5%. Analysis of multimode damping using a single absorber indicated that the absorber to maximize the achievable damping in all the modes. Passive actuator components and active feedback gains were derived in similarmeously and sequentially yielding identical results whose passive components equal those of the passive absorber and active feedback damping tests were performed. A single mode

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AD-A168 929

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# DITC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN34M

# AD-A166 828 CONTINUED

desping ratio of 4.2% was achieved by adding 2.3% of structural mass: 77% of which corresponds to 'dead' absorber mass: Multi-Input, single-output control provided d...cing ratios ranging from 2% to 3%. This functioning collocated control alement, composed of actuators, sensors and local and component leve! processors, constitutes the first stage of research and experimentation into distributed, hierarchic active control of alastic structural behavior.

DESCRIPTORS: (U) \*DAMPING, \*FLEXIBLE STRUCTURES, \*BEAMS(STRUCTURES, \*DETAMS(STRUCTURES, \*CSTAMS, \*CSTEMS, TUNION, FREDBACK, STIFFNESS, ENGRY ANS. \*CSTYE SYSTEMS, TUNION, FLOOR SYSTEMS, DETECTORS, \*CSTARCHES, DISTRIBUTION, ELASTIC PROPERTIES, MASS, \*SPACE LECHOLOGY, SIMULATION

DENTIFIERS: (U) \*Flexible space structures, Active control, Active damping, Active feedback gain, Distributed control, Hierarchia control, Modal damping, Vibration absorbers, PEB1102F, WUAFOSR2302B1

# AD-A169 926 12/1

GEORGIA INST OF TECH ATLANTA

(U) Heredity of Stationary and Reversible Stochastic Processes.

DESCRIPTIVE NOTE: Technical rept.,

NAR 86

PERSONAL AUTHORS: Serfozo, Richard F.;

CONTRACT NO. AFOSR-84-0367

PROJECT NO. 2304

TASK NO. AS

MONITOR: AFOSR TR-86-0381

# UNCLASSIFIED REPORT

ASSTRACT: (U) When a stochastic process (a random measure, set, field, etc. c. a group) is stationary, ergodic, or reversible, then certain functions of this process inherit these properties. This document presents sufficient conditions for this inheritance. (Author)

DESCRIPTORS: (U) \*STOCHASTIC PROCESSES, QUEUEING THEORY, TRANSFORMATIONS(MATHEMATICS), STATIONARY, REVERSIBLE, EROODIC PROCESSES, INVARIANCE

IDENTIFIERS: (U) PEB1102F, WUAFOSR2304A5

# DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN34N

AD-A168 828 11/4 11/2 22/2 AD-A168 752

CALIFORMIA UNIV LOS ANGELES DEPT OF MATERIALS SCIENCE

AND ENGINEERING

(U) New Materials for Spacecraft Stability and Damping - A Feasibility Study.

DESCRIPTIVE NOTE: Final technical rept. 1 Oct 83-30 Sep 84

MDV 85 52P

PERSONAL AUTHORS: Mackenzie, John D.;

CONTRACT NO AFOSR-83-0221

PROJECT NO. 2303

TASK NO. A3

MONITOR: AFDSr TR-66-0308

# UNCLASSIFIED MEPORT

Composites (U) A preliminary feasibility study has been comporants of spacecrafts. These included some new glasses, glass-cerasits, These included some new glasses, glass-cerasits, fibers and composites such as low expansion coppe, blue, nostlicate glasses, hollow and oval glass fibers and hollow fiber-glass-polymer. Composites. The low temperature expansion coefficients, elastic moduli and damping constants were measured. Recommentations are made for further research and development of some selected materials which appeared to be promising candidates for spacecraft structures.

DESCRIPTORS: (U) +QLASS FIBERS, +GLASS, COEFFICIENTS, CONSTANTS DAMPING, EXPANSION, LOW TEMPERATURE, MODULUS OF ELASTICITY, SPACECRAFT, STABILITY, STRUCTURAL MEMBERS, STRUCTURES, CERAMIC MATERIALS, COPPER, GLASS REINFORCED PLASTICS THEMBER EXPANSION, TEMPERATURE COEFFICIENTS, SPACERRFY COMPONENTS

IDENTIFIERS (U) Aluminosilicate glass, Hollow fibers, Oval fibers, Damping materials, Engineering materials, MUAFOSR2303A3, PEB1102F

1/C 7/C 2/C 2/C 2/C

V:RGINIA INST OF MARINE SCIENCE GLOUCESTER POINT DEPT OF CI-EMICAL OCEANDARAPHY

U) Investigation of Deviations from Ideality in the Two Liquid Phase Region of Systems of Medium Molecular Weight Hydrocarbon Mixtures and Mater.

DESCRIPTIVE NOTE: Final rept. 1 Jan 83-31 Dec 85,

FEB 88 115P

PERSONAL AUTHORS: Burris, David R. ; MacIntyre, William G. ;

CONTRACT NO. AFOSR-83-0038

PROJECT NO. 2303

TASK NO. B2

MONITOR: AFOSR TR-86-0397

# UNCLASSIFIED REPORT

astract: (U) Two-phase systems of liquid hydrocarbon asixture, containing medium molecular weight aromatic and aliphatic hydrocarbons, and water were examined in both equilibrium and kinetic experiments. Knowledge of the aqueous solution behavior of liquid hydrocarbon mixtures is important in determining the fate of hydrocarbon mixtures is important in determining the fate of hydrocarbon mixtures of components of fuels and patroleum in environmental release situations. The equilibrium solute concentration phase and its activity, its mole fraction in the hydrocarbon phase and its activity coefficient of the pure compound solubility, its mole fraction in the hydrocarbon phase. Hydrocarbon phase activity coefficients determined or in massurements (at 20 and 70 degs.) did not differ significantly. This indicated that component aqueous phase activity coefficients did not decrease measurably in the presence of hydrocarbon co-solutes, in contradiction to some praviously published observations, and thirt the presence of water in the hydrocarbon phase was not significant at these temperatures. Methods for predicting multicomponent mixture solubilities were demonstrated. Aqueous solution behavior of mixtures containing a chlorinated hydrocarbon

AD-A169 752

# SEARCH CONTROL NO. EVICEAN DIIC REPORT BIBLIOGRAPHY

CONTINUED AD-A169 762 or a fatty acid surfactant was also determined

\*\*SCRIPTORS: (U) \*\*HORDCARBANS, \*\*REACTION KINETICS, \*\*SOLUBILITY: MIXTURES, WATER, AROMATIC HYDROCARBONS, \*\*ALIPHATIC HYPACARBONS, WOLECULAR WEIGHT, CHEMICAL EQUILIBRIUM LIQUID PHASES, SOLUTES, THERMODYNAMICS, VAPAR PRES: (E, TEMPERATURE, CH.ORINATED HYDROCARBONS, PATTY ACIDS: SURFACE ACTIVE SUBSTANCES, CONCENTRATIVHICHEMISTRY), COEFFICIENTS, BINARY COMPOUNDS DESCRIPTORS:

PEG1102F, WUAFUSR2303B2 IDENTIFIERS: (U)

20/11 11/8 AD-A169 747 CALIFORNIA UNIV DAVIS DEPT OF MECHANICAL ENGINEERING

(U) Fundamental Investigations of Failure during Superplastic Forming Process.

DESCRIPTIVE NOTE: Final rept. 1 Peb 82-31 Jan 88

APR 86

PERSONAL AUTHORS: Mukherjee, Amiya K.

AF05R-82-0081 CONTRACT NO.

2308 PROJECT NO.

TASK NO.

7

AF0SE TR-88-0482 MONITOR:

## UNCLASSIFIED REPORT

alpha-beta alloy (Ti-8A1-4V) and the Ni-modified alloy (Ti-8A1-4V-2Ni) showed that there is significant microstructural evolution during superplastic deformation. These structural evolutions affect the parameters for the model prediction, the strain rate sensitivity is found to be a function of temperature, in a way that exactly parallels the dependence of beta-volume fraction on temperature. An empirical equation has been proposed to characterize the non-steady state microatructure in terms of the dependence of strain hardening coefficient on significant level of strain hardening due to increase in dislocation density as a function of strain. The grains supposition of superplasticity). One does not observe a temperature and strain rate. The maximum attainable ductifity in this alloy is associated with a dynamic balance between strain hardening (due to grain growth) and strain softening (due to in situ grain refinement). The 7476-TRB aluminum alloy (heat B) undergoes constitutive equation for superplasticity. Contrary to climb over the Cr-rich particles. The alloy cavitates The experimental work on both the base deformation is equal to that for voludiffusion, possibly due to the necessity of the collocations to superplicatic deformation. The activation energy of do not remain equiaxed (which is contrary to most true steady-state in the microstructure during ABSTRACT: (U)

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SEARCH CONTROL NO. EVN34N DIIC REPORT BIBLIGGRAPHY

> CONTINUED AD-A16H 747

extensively due to decohesion of the intersetailing perticle/grain boundary interface.

\*TITANIUM ALLOYS, \*ALUMINUM, \*VANADI\*M, \*\*METALWORKING, ACTIVATION ENERGY, BALANCE, CLIMBING, CORFFICIENTS, DEFORMATION, DENSITY, DIFFUSION, DISLOCATIONS, COLUTION(S) \*\* CRALL) FALLORE, GRAIN AROMING, STRAIN GRAIN FROMETIES, STRAIN HARDENING, SERSITUATIVE, MODELS, PLASTIC PROPERTIES, STRAIN HARDENING, STRAIN MECHANICS), TEMPERATURE, STRAIN(MECHANICS), TEMPERATURE, VOLUME, NICKEL ĵ DESCRIPTORS

MENTIFIERS: (U) Titanium alloy 8A1 4V, Titanium alloy BA1 4V 2Ni. PESI102F, WUAFOSR2308A1 IDENTIFIERS:

17/1 AD-A169 717

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CONNECTICUT UNIV STORRS DEPT OF ELECTRICAL ENGINEERING AND COMPUTER SCIENCE

(U) Ortlier Resistant Filtering and Smoothing.

Interim rept. 1 Jul 85-30 Jun 88, DESCRIPTIVE NOTE:

APK 18

Tsaknakis, Haralampos ; Patantoni-Kazakos, PERSONAL AUTHORS:

UCT/DEECS/TR-86-6 REPORT NO.

AF0SR-83-0228 CONTRACT NO.

2304 PROJEST NO.

TASK MO.

TR-88-0365 AFOSR MONITOR:

## UNCLASSIFIED REPORT

Assume that the noise and information processes are mutually independent, and model the noise process as nominally Gaussian with additive independent outliers. For the above system model, one first develop a theory for outlier resistant filtering and smoothing operations. Then design specific such nonlinear operations, and study their performance. The performance criteria are asymptotic mean squared error at the Gaussian model, the breakdown point, and the influence function. The operations combine excellent at the nominal model performance, with strong resistance to outliers. Keywords: Filtering: Smoothing; Qualitative robustness; Dutlier Consider a stationary Gaussian information process transmitted through an additive noise channel. Resistance.

ESCRIPTORS: (U) \*INFORMATION PROCESSING, \*MATHEMATICAL FILTERS, \*STOCHASTIC PROCESSES, CHANNELS, NOISE, NONLINEAR SYSTEMS, OPERATION, RESISTANCE, GAUSSIAN QUADRATURE DESCRIPTORS:

DENTIFIERS: (U) Outliers(Statistics), Robust procedures, Smoothing, PEB1102F, WUAFOSR2304A5 IDENT IF LERS:

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SEARCH CONTROL ND. EVN34M DTIC REPORT BIBLIOGRAPHY

AD-A168 685

ö CALIFORNIA UNIV IRVINE CENTER FOR THE NEUROBIOLOGY LEARNING AND LENDR (U) Conference on the Maurobiology of Learning and Memory (2<u>7</u>

DESCRIPTIVE NOTE: Final mapt. 1 Jul 84-30 Jun 85,

MAY 10

McGaugh, James L. ; PERSONAL AUTHORS:

N00014-8--0-0108 CONTRACT NO.

## UNCLASSIFIED REPORT

Europer for its Second Conference on the Neurobiology of Learning and Place of Conference on the Neurobiology of Learning and Memory at the University of California. Irvine, and was held on October 6-9, 1984. The Symposium focussed on three major toolos: Brain systems and Lerning. Comparative aspects of learning and memory; and Lerning, memory and cognitive processes. The progress consisted of presentations by 16 major speakers. and \$3 poster presentations, and was attended by over 300 Funds from this grant provided partial participants

DESCRIPTORS: (U) \*\*NEUPOBIDLOGY, \*! EARNING, \*\*NEMORY(PSYCK": OGY), BRAIN, CALIFORNIA, COGNITION, SYMPOSIA, COM-ARISON

AD-A188 640

DAYTON UNIV OH RESEARCH INST

(U) Symposium on Applied Surface Analysis (7th) Held in Callege Park, Maryland on 15-17 May 1985.

DESCRIPTIVE NOTE: Final rept. 18 Mar 35-30 Mar 86,

550

Grant, John T. PERSONAL AUTHORS:

UDR-18-86-60 REPORT NO.

M00014-55-C-0118 CONTRACT NO.

## UNCLASSIFIED REPORT

SYRACT: (U) Areas receiving special attention at this symposium were: chemical bonding and reactions at metal-semiconductor interfaces; surface analysis and the tribological processes of ion implanted materials; microbeam analysis; and laser ionization of sputtered neutrals. Other topics discussed included adsorption, adhesion, corrosion, wear, and thin films. The proceedings of the symposium have been published in a special issue of the journal: Applied Surface Science. (Abstracts) ABSTRACT:

\*SURFACE CHEMISTRY, ABSTRACTS, ADMESION, ADSORPTION, CHEMICAL BONDS, CORROSION, INTERFACES, ION IMPLANTATION, IONIZATION, LASERS, MATERIALS, METALS, MICROBEAMS, SURFACES, SYMPOSIA, THIN FILMS \*SEMICONDUCTORS, \*SURFACE ANALYSIS, DESCRIPTORS:

AC-4169 635

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EVN34M 42 PAGE

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DITIC REPURT BIBLIDGRAPHY SEARCH CONTROL NO. EVN34M

AD A108 468 17/2 14/4

UNIVERSITY OF SOUTHERN CALIFORNIA LOS ANGELES DEPT OF ELECTRICAL ENGINEERING

(U) Reliability Analysis of a Communication Network with Multimose Components,

3 ~

PERSONAL AUTHORS: Critou, Shan-Nong; Lt, Victor 0.;

CONTRACT NO AFOSR-84-0268

PROJECT ND. 2304

TASK NO. AS

MONITOR: A7957 TR 86-0331 UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Presented at IEEE INFOCOM, Mismi, FL. 7-10 Apr 84

the velicality of consultation networks with multimode compowerts previous earth on network mith multimode compowerts previous earth on network reliability has feated on models it. On each compowert may be in one of two modes is connected, are not meaningful in a miltimode model. Therefore, the mean message delay of the network is defined as the performance measure. An exact is defined as the performance measure is not feasibly due to the large number of network states, corresponding to network components boing in different modes. We have twelloped an approximation method to calculate this reliability measure is not feasibly the network components boing in different modes. We have the states of the network in order of decreasing probability, an algorithm DRDER-N is developed to generate times states in the proper order.

DESCRIPTORS (U) «CUMBUNICATIONS NETWORKS, DELAY, MEAN, MESSAGE PROCESSING, MODELS, MULTINODE, NETWORKS, NODES, PARTS, RELIABILITY, RELIABILITY(ELECTRONICS).
MATHEMATICAL MODELS, REPRINTS

IDENTIFIERS (U) WUAFOSR2304AB

4D-A168 113 10/2

TEXAS TECH UNIV LUBBOCK PULSED POWER LAB

(U) Coordinated Research Program in Pulsed Power Physics.

DESCRIPTIVE NOTE: Annual rept. 10 Jan 84-31 Dct 85.

DEC 88 202P

PERSONAL AUTHORS: Kristiansan,M.;Schaefer,Q.;Schoenbach, K.;Kroupholz,H.;

CONTRACT ND. AFOSR-84-0032

PRO- /ECT NO. 2301

TASK ND. A7

MONITOR: AF05R TR-88-0305 UNCLASSIFIED REPORT

ASSTRACT: (U) The program's, related to pulsed power research, main explasis is on gaining a better understanding of repetitive opening and closing switch phenomena. The main effort is on diffuse discharge opening switches but considerable programs has also been aade on understanding and describing fundamental, transient discharge phenomena. Some effort has also been aade on understanding and describing fundamental, transient discharge phenomena. Some effort has also been given to studies of electrode erosion and insulator dawage in high power closing switches. In addition sevaral smaller studies have considered various novel ideas and concepts to determine their potential for further investigations. Keywords: Pulsed power: Diffuse discharges; Field distortion; Streak photography; X ray triggering.

DESCRIPTORS: (U) \*PULSE GENERATORS, \*ELECTRIC SWITCHES, TRIGGER CIRCUITS. \*ELECTRODES, \*ERDSION, ELECTRIC DISCHARGES, PULSE RATE, LASER APPLICATIONS, ELECTRIC ARCS, SPARK GAPS, SWITCHES, DIFFUSION, HIGH POWER, OPENING(PROCESS), POWER, PULSES, STREAK CAMERAS, DISTORTION, TRANSIENTS, X RAYS

IDENTIFIERS: (U) PEB1102F, WUAFDS2301A7

AD-A169 113

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# SEARCH CONTROL ND. EVN34M DITC REPORT BIBLIDGRAPHY

SOUTH CAROLINA UNIV COLUMBIA DEPT OF STATISTICS

AD-A188 108

(U) On the Bounded Regret of Empirical Bayes Estimators.

DESCRIPTIVE NOTE: Technical rept.,

216 EV IS

PERSONAL AUTHORS: YU, Kat F.

TR-112 REPORT NO. AF05R-84-0156 CONTRACT NO.

2304 PROJECT NO.

ş TASK NO.

AF0SR TR-86-0276 MOMITOR:

UNCLASSIFIED REPORT

ISTRACT: (U) In the first Jerzy Nayman Memorial Lecture, Robbins (1853) has outlined a wide class of problems concernit; the general empirical Bayes approach and the linear e. vical Bayes approach to estimation. This paper studies a special case which includes several important standard distributions. Specifically let (theta, x) be a random victor such that theta has a distribution function G, and the conditional expectation of x given theta satisfies E(x/theta) = theta. Suppose it is desired to use a linear function A+Bx of the observed x to estimate the unknown parameter theta. ABSTRACT:

SCRIPTORS: (1) \*BAVES THEOREM, \*ESTIMATES, FUNCTIONS PUNCTIONS (MATHEMATICS), LINEARITY, DISTRIBULIES FUNCTIONS DESCRIPTORS

PEB1102F, WUAFDSR2304A5 3 I DENTIFIERS:

17/8 AD-A188 073

STANFORD UNIV CA DEPT OF ELECTRICAL ENGINEERING

(U) A High Resolution Algorithm for Combined Time-of-Arrival and Direction-of-Arrival Estimation.

DESCRIPTIVE NOTE: Rept. for 1984-1985,

NOV BS

Spielman, Daniel ; Paulraj, A. ; Kailath, PERSONAL ALTHORS: Thomas :

AF05R-83-0228 CONTRACT NO.

2304 PROJECT NO.

¥ TASK NO. AFOSR MONITOR:

TR-86-0266

UNCLASSIFIED REPORT

Pub. In Asilbaer Conference

Proceedings, 6 Nov 85. SUPPLEMENTARY NOTE:

BSTRACT: (U) Over the past few years several high resolution methods for direction finding with passive arrays have been developed. In this paper, we use one the these methods, the MUSIC algorithm, to solve a two dimensional radar problem. Namely, given an antenna array and a transmitter which emits finite duration pulses, we wish to determine both the range and direction of multiple targets from the backscattered achoes. We show how the MUSIC algorithm can be adapted to this situation. Simulations are presented which show good performance. Keywords: High resolution algorithm; Time-of-arrival; Direction-of-arrival estimation; Antenna array; Radar and sonar applications. (Reprints) ABSTRACT: (U)

ISCRIPTORS: (U) \*DIRECTION FINDING, \*ALGORITHMS, \*RADAR TRACKING, ANTENNA ARRAYS, ESTIMATES, HIGH RESOLUTION, PASSIVE SYSTEMS, RADAR, REPRINTS, SONAR, TRAGETS, TIME, TWO DIMERSIONAL, PROBLEM SOLVING, RADAR TRANSMITTERS.

RADAR PULSES, BACKSCATTERING, RADAR ANTENNAS, TARGET DESCRIPTORS:

IDENTIFIERS; (U) MUSIC algorithm, PEB1102F

AD-A168 108

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SEARCH CONTROL NO. EVN34M DITC REPORT BIBLIOGRAPHY

AD-A188 072

CONTINUES AD-A188 073

MUAPOSA 2 304 AS

STANFORD LINIV CA DEPT OF ELECTRICAL ENGINEERING

(U) A Time-Domin Signal Resolution Problem.

DESCRIPTIVE EDIE: Rept. for 1864-1868.

:

PERSONAL AUTHORS: Bruckstein, A. M. ; Shan, T. J. ; Kallath, T.

AF05R-83-0228 CONTRACT NO.

PROJECT NO. 2304

3 TASK NO. AF05R TR-66-0272 MONITON:

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. In ICASSP Conference Proceedings, Apr 18.

a recently developed algoratructure technique for multiple direction finding with sensor arrays and exploits the structure of the received signal to variance matrix. The method presented also solves more general problems of signal detection and resolution. Reyvords: MUSIC(Multiple Signal Characterization); Overlapping echoes; and MUSIC algorithm. ABSTRACT: (U) This reprint presents a time-domain method for estimating the number and delay times for overlapping signals with a priori known shape, frum noisy observations received by a sensor. The method is based on

SCRIPTORS: (U) \*SIGNAL PROCESSING, \*TIME DOMAIN, DIRECTION FIND'NG, OVERLAP, RESOLUTION, DELAY, TIME, REPRINTS, DETECTION, SIGNALS, ALGORITHMS, ARRAYS, DETECTORS, REPRINTS DESCRIPTORS:

IDENTIFIERS: (U) MUSIC(Multiple Signal Characterization). MUSIC algorithm, PEB1102F, WUAFOSR2304A5

AD-A169 072

AD-A168 073

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EVN34M 155 PAGE

DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN34M

AD-A168 OC.) 11/6 20/11

CALIFORNIA UNIV BERKELEY

(U) International Conference/Morkshop on Small Fatigue Cracks (2nd) Held in Santa Barbara, California on 5-10 January 1988.

DESCRIPTIVE NOTE: Final rapt.,

MAR 86 31P

PERSONAL AUTHORS: Ritchie, Robert D. ; Lankford, James ;

CONTRACT NO. DAAG28-88-G-0110, AFDSR-85-0358

MONITOR: APO, AFOSA

APD, AFDSR 21036.1-MS-CF, TR-86-0506

## UNCLASSIFIED REPORT

technical numbers of the Second International Engineering foundation Conference/Workshop on Suall Fatigue Cracks, held the Sacra International Engineering foundation Conference/Workshop on Suall Fatigue Cracks, held the Sacra Barbara, California, B-10 January, 1936. It provides a current assessment of the pertinent issues with raspect to cafinition, differences in behavior compared to long cracks, environmental effects, driving forces for saall crack extension, intrinsic thresholds, and the aspectation of small crack methodology to life prediction and alloy design. A listing of the conference the report

DESCRIPTORS (U) \*FATIQUE (MECHANICS), ALLOYS, CALIFORNIA, CRACKS, E\*! (#) CAMBETTAL IMPACT, INTERNATIONAL, METHODOLOGY, SYMPOSIA, \*\*FKSHOPS, CRACK PROPAGATION, CRACK PROFAGATION,

AD-A168 047 6/16 6/1

CALIFORNIA UNIV IRVINE CENTER FOR THE NEUROBIOLOGY OF LEARNING AND MEMOR

(U) Effects of Acetylcholinesterase Inhibition on Cholinergic Transmission in the Hippocamps | Silce.

DESCRIPTIVE NOTE: Final rept. 1 Apr 82-30 Sep 85,

APR 86 25

PERSONAL AUTHORS: Lynch, Gary;

CONTRACT NO. AFOSR-82-0116

PROJECT NO. 2312

FASK NO. A3

MONITOR: AFOSR TR-86-0288

## UNCLASSIFIED REPORT

ABSTRACT: (U) This work is concerned with the mechanisms used by brain cells to change their functional intercornections and the possibility that these are also involved in neuropathology. Three inter-related questions were studied: 1) what effects are produced in target were studied: 1) what effects are produced in target were studied: 1) what effects are produced in target acidic amino acids, acetylcholine); 2) foss partial acidic amino acids abmonded exposure to neurotransmitters (e.g., acidical aci

42-A169 047

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# DITC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN34M

ND-A166 047 CONTINUED

minibrane domains, and apperently digested by calpain; e) the calpoin-fodrin interaction is accelerated by calmedulin

DESCRIPTOR: (U) \*\*NEUROCHERICAL TRANSMISSION,
\*COLLINE :- GRASE INHIBITORS, \*HIPPOCAMPUS, ACETYLCHOLINE,
\*COLLINE :- GRESTERASE, ACTIVATION, AMINO ACIOS, BRAIN,
COCLINE :- S. MENDET, DECADATION, DESENSITIZING,
ERYTHROL :- S. GROOTH GENERAL), INHIBITION, MOLECULAR
STRUCTURE: NERVE CELLS, MERVOUS SYSTEM, PATHOLOGY,
POTENCY, POTEINS, REGIONS, SENSE ORGANS, SYNAPSE,
TISSMES(GRICLOGY), EXPOSURE(PHYSIOLOGY), MEMBRANES(BIOLOGY)

IDENTIFIERS. (U) Protesses, PESTIG2F, WUAFOSR2312A3

AD-A188 020 8/2

STANFORD UNIV CA INFORMATION SYSTEMS LAB

(U) Adaptive Resolution of Overlapping Echoes,

. SE AGN

PERSONAL AUTHORS: Shan, T. J. ; Bruckstein, A. M. ; Kailath, T.

CONTRACT NO. DAAG28-78-C-0215, DAAG28-E1-K-0087

PROJECT NO. 2304

TASK NO. AS

MONITOR: AFOSR TR-86-0268

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Asilomer Conference, 8 Nov 85.

ABSTRACT: (U) We present a new adaptive method for estimating the arrival times for overlapping pulses with a priori known shape, from the noisy observations received by a sensor. The method is an adaptive version of an off-line technique based on the eigenstructure mathod for resolution of overlapping echoes. This problem is important in various applications such as radar and somer data processing, geophysical/seignic exploration and biomedical engineering. In these applications a known signal is used to probe a modium and the returning response - in the form of delayed overlapping echos in noise - has to be processed to yield information on the nature and location of scatterers.

DESCRIPTORS: (U) \*SIGNAL PROCESSING, \*ECHOES, ADAPTIVE SYSTEMS, BIOMEDICINE, DATA PROCESSING, ENGINEERING, GEOPHYSICAL PROSPECTING, OFF LINE SYSTEMS, RADAR, RESOLUTION, SEISMOLOGY, SONAR, ARRIVAL, TIME, ESTIMATES, REPRINTS. DELAY, SCATTERING, SONAR SIGNALS, RADAR SIGNALS, REPRINTS. IDENTIFIERS: (U) Overlapping echoes, Arrival time, Adaptive resolution, Eigenstructure method, Rf modulated signals, PE61102F, WUAF0\$R23/445

AD-A188 047

AD-A169 020

UNCLASSIFIED

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# SEARCH CONTROL ND. EVROAM OTIC REPORT BIBLIDGRAPHY

AD-A184 843

MICHIGAN UN.V. AND AMOR DEPT OF ELECTRICAL ENGINEERING AND COMPUTER SCIENCE

An Optimal Instruction-Schoduling Model for a Class of Vector Processors.

DESCRIPTIVE MATE: Technical rept.,

=

PERSONAL AUTHORS: Arys, Stanak

AF05R-84-0086 CONTRACT NO.

230 PROJECT NO.

TASK NO.

AF05R TR 88-0313 MONITOR:

## UNCLASSIFIED REPORT

PPLEMENTARY NOTE: Pub, in IEEE Transactions on Computers, vc.34 nil p881-888 Nov 85. SUPPLEMENTARY NOTE:

ABSTRACT: (U) An integer programming model that portrays the architectural features of a class of vector and array processors has been developed. This model is used to processors has been developed. This model is used to processors to perform that meeting the codes and instruction loops. Loop activation is separately considered because of special consideration that must be given to the effects of the instructions of consecutive loop iterations on each other that are hidren when static instruction scheduling approach is used. Using the model, a number of experiments rave been contacted in optimal scheduling of Cray assembly codes. Keywords: Reprints; Computer architecture (Author) ABSTRACT:

DESCRIPTORS: (1) \*INTEGER PROGRAMMING, ARRAYS, ASSEMBLY, COOTING, COMPUTER PROGRAMMING, INSTRUCTIONS (LODPS, OPTIMIZATION, PROCESSING EQUIPMENT, REPRINTS, SO:(OULING, COMPUTERIZED SIMULATION

PEBI102F, WUAFOSR2304A3 ĵ DENTIFIERS

12/2 AD-A166 842 NORTH CANDLINA UNIV AT CHAPEL HILL CENTER FOR STOCHASTIC PROCESSES

(U) Weak Convergence of the Variations, Iterated Integrals, and Doleans-Dade Exponentials of Sequences of Semimentingsles.

Technical rept.; Sep 85-Aug DESCRIPTIVE HOTE:

3

PERSONAL AUTHORS:

TR- 135 REPORT NO.

F48620-85-C-0144 CONTRACT NO.

PROJECT NO.

2 TASK NO. MONITOR:

AF0SR TR-88-0327

# UNCLASSIFIED REPORT

STRACT: (U) This document investigates the weak convergence of variations, iterated integrals and Doleans Dade exponentials. V sub k (Y), I sub k (Y) and E(gamma Y) are called respectively the variations, the iterated integrals and the Doleans-Dade exponential of the seminartingale Y. ABSTRACT: (U)

DESCRIPTORS: (U) \*WEAK CONVERGENCE, EXPONENTIAL FUNCTIONS, INTEGRALS, VARIATIONS, SEQUENCES(MATHEMATICS), ITERATIONS

Semimertingsles, PEG1102F. IDENTIFIERS: (U) WUAFUSR2304AS

AD-A168 942

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# SEARCH CONTROL NO. EVN34N DIIC REPORT BIBLIDGRAPHY

SOUTH CAROLINA UNIV COLUMBIA DEPT OF STATISTICS

12/1

AD-A166 841

Asymptotically Optimal Bandwidth Selection for Kernel Danaity Estimators from Randomly Right-Censored Salones

DESCRIPTIVE NOTE: Technical rept.,

27P 24

Marron, J. S. ; Padgett, N. J. ; PERSONAL AUTHORS:

TR-113 REPORT NO.

AFOSR-14-0156 CONTRACT NO

PROPERT NO

5 TASK NO.

AF OSR MONITON:

TR-88-0277

# UNCLASSIFIED REPORT

equares cross-validation, then it is asymptotically optimal in a compelling sense. A by-product of the first part is an interesting comparison of the two most popular kernel estimators. Keywords: Monparametric density STRACT: (U) This paper makes two important contributions to the theory of bandwidth selection for kernel desiry estimators under right cansorship. First, an asymptotic representation of the integrated squared error into easily understood varience and squared bias components is given. Second, it is shown that if the bandwidth is chosen by the data-based method of least estimation; Smoothing parameter. (U) • ESTIMATES, • KERNEL FUNCTIONS, CENSORSHIP, DATA BASES, DENSITY, MONPARAMETRIC SELECTION, THEORY, LEAST SQUARES METHOD STATISTICS. DESCRIPTORS

PEB1102F, MUAFDSR2304AS ŝ **IDENTIFIERS** 

6/13 9/30 AD-A188 883

STATE UNIV OF NEW YORK AT BINCHANTON DEPT OF STOLOGY

(U) Membrane Alterations following Toxic Chamical Insult.

DESCRIPTIVE HOTE: Final rept. 15 Jul 84-14 Jan 88.

**M** 50

PERSONAL AUTHORS: Liss, Alan

AF058-84-0248 CONTRACT NO.

2917 PROJECT NO.

₹ TASK NO. AF0SR TR-86-0298 MONITON:

UNCLASSIFIED REPORT

ABSTRACT: (U) A procaryotic cell system has been developed that can be used to determine the toxic action of chemicals acting at the level of the eucaryotic or procaryotic cytopissatic membrane. Cell vall-less microbes known as mycopissatic membrane. Cell vall-less microbes known as mycopissatic seed for this current study, two porfluorinated fatty acids (cs and cio) were found to inhibit the growth of the test mycopissats. Two apparent activities were observed. At high concentrations (> 10 mM) a detergent-like action was noted. At low concentrations (< 10 mM) cell cell west was noted. At low concentrations (< 10 mM) a detergent-like action was noted. At low concentrations (< 10 mM) cell desting the cell membrane (the presumed target of the toxic compounds) resulted in altered levels of the toxic compounds sodium codecy! sulfate polyacrylamide gell electrophoresis, high performance liquid chromatography and microbiological procedures (such as selecting toxin resistant mutants). Keywords: Mycnplasmas; Fluorocarbons; Toxic Chemicals.

\*FATTY ACIDS, \*MEMBRAMES, \*MYCOPLASMA, CYTOPLASM, CELLS(BIOLOGY), CONCENTRATION(COMPOSITION), HIGH RATE, MICROBIOLOGY, FLUORINATION, CHEMICALS, TOXICITY, MUTATIONS, DEATH, GROWTH(GENERAL), HIGH RESOLUTION, LIQUID CHROMATOGRAPHY, RESISTANCE, TOXINS AND ANTITOXINS \*TOXICITY, \*FLUORINATED HYDROCARBOILS, Ê DESCRIPTORS:

AD-A188 893

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AD-A168 941

SEARCH CONTROL NO. EVN34M DIIC REPORT BIBLIDGRAPHY

> CONTINUED AD-A166 883

(U) PEB1102F, WUAFUSR2817A4

IDENTIFIERS:

20/11 AD-A168 888

WEA CAMBRIDGE MA

(U) Mave Propagation and Dynamics of Lattice Structures.

Annual rept. 1 Apr 83-30 Apr 84, DESCRIPTIVE NOTE:

208P WAY B4 Williams, James H. , Jr.; Eng, Freddie C. ; PERSONAL AUTHORS: Lee, Samson S. ;

F48620-83-C-0082 CONTRACT NO.

2307 PROJECT NO.

TASK NO.

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TR-86-0291 AFOSR MONITOR:

## UNCLASSIFIED REPORT

method to the analysis of wave propagation and vibration in periodic structures is introduced. Analyses of a one-dimensional rod, a three-bay planar lattice structure and a three-dimensional tetrahedral truss are given to illustrate the general approach in applying the transfer matrix method. In addition, a numerical example is given. The frequency response functions for specific locations in a one-dimensional rod due to an excitation at a particular location are obtained using a basic language computer program. The responses at one location in the rod due to an impulse excitation, a square pulse excitation at a second location are also obtained. Keywords: Large space The application of the transfer matrix structures.

SCRIPTORS: (U) \*SPACECRAFT, \*LATTICE DYNAMICS, \*STRUCTURAL ANALYSIS, COMPUTER PROGRAMS, EXCITATION, FREQUENCY RESPONSE, FUNCTIONS, ONE DIMENSIONAL, POSITION, LOCATION, PROGRAMMING LANGUAGES, PULSES, RODS, SOUARE MAYES, STRUCTURES, THREE DIMENSIONAL, TRUSSES, VIBRATION, WAVE PROPAGATION, TRANSFER FUNCTIONS, MATRICES(MATHEMATICS) DESCRIPTORS: (U)

BASIC programming language, PEB1102F, IDENTIFIERS: (U) WUAFOSR2307B1

AC-A188 858

UNCLASSIFIED

EVN34M 180 PAGE

AC-A166 883

# SEARCH CONTROL NO. EVN34M DIIC REPORT BIBLIOGRAPHY

20/13 AD-A184 186 ILLINDIS UNIV AT URBANA COORDINATED SCIENCE LAB

(U) Migh Speed Compound Semiconductor Devices in Layered Structures

DESCRIPTIVE NOTE: Finsi rept. 1 Jan 83-31 Dec 85

PERSONAL AUTHORS: Nortoc, Hadie

CONTRACT NO. F48620-83-K-0021

2306 PROJECT NO.

ວ TASK NO.

TR-86-0301 AFC S R MONITON:

UNCLASSIFIED REPORT

ISTRACT: (U) Much progress has been made in the grouth of gads on \$1 Gads MESFETS, MODFETS, HBTS. lasers on \$1 modeling of HOFETs and MODFET ring oscillators, IndaAs AldaAs MODFETs, IndaAs but electron transistors, Gads/Alda resonant turnsling transistors, single and multi-quantum wells. Accomplishments were reported in about 200 journal articles, 50 conference papers and 25 seeinars over the past three years, Only the GaAs on St, In sub yos sub1-74s/x13aAs MODFET and INGaAs hot electron provided as an appendix for those who are interested summerized in this document. A list of publications covering all of the research funded by the AFOSR is transistor related research accomplishments are (Author) ABSTRACT:

ESCRIPTORS: (U) \*SEMICONDUCTOR DEVICES, \*CRYSTAL GROWTH, DOCUMENTS, GALETUM ALSENIDES, LAYERS, DSCILLATORS, QUANTUM ELEC: \*HICS, RINGS, STRUCTURES, TABLES(DATA), TRANSISTORS, STLICOM, SEMICOMOUGTOR LASERS, MONOLITHIC STRUCTURES(ELECTRONICS), INTEGRATED CIRCUITS DESCRIPTORS: (U)

IDENTIFIERS: (U) PEB1102F, MUAFDSR2305C1

17/2.1 AD-A188 789 STANFORD UNIV CA DEPT OF ELECTRICAL ENGINEERING

(U) Multiple Signal Resolution with Uncertain Signal Subspace,

MOV 155

PERSONAL AUTHORS: Shan, T. J. ; Bruckstein, A. M. ; Kailath, T.

AF05R-83-0228 CONTRACT NO.

2304 PROJECT NO.

TASK NO.

AF0SR TR-88-0267 MONITOR:

UNCLASSIFIED REPORT

Pub in Asilomar Conference, n'19 5p, 6 SUPPLEMENTARY NOTE: Nov 45.

sensor arrays this uncertainty model accounts for phase and gain perturbations in the sensors as well as for inaccurate knowledge of sensor positions. The proposed mathod for dealing with incomplete information on the signal subspace exploits the structure of the Lata modal to first estimate the missing parameters by a 'signal implantation' technique. In direction finding the method amounts to using a predetermined set of signals arriving from known directions together with the signals arriving from known directions together with the signals configurating at the real targets to enable on-line monitoring of the signal subspace. Keywords include: Multiple signal resolution; Self-cohering arreach; Sensor algorithm for signal resolution is given for the case of incomplete information on the assumed 'signal subspace'. The algorithm is based on a multiplicative model of signal subspace uncertainty. In direction finding with arrays; and Signal implantation technique. (Reprints) An extension of the signal subspace ABSTRACT: (U)

DESCRIPTORS: (U) \*SIGNAL PROCESSING, RADIO SIGNALS, ALGORITHMS, DIRECTION FINDING, MODELS, MONITORING, ON LINE SYSTEMS, REPRINTS, DETECTORS, GAIN, PERTURBATIONS, SIGNALS, DATA MANAGEMENT, MULTIPLICATION FACTOR, TARGETS,

AD-A168 798

AD-A163 866

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SEARCH CONTROL NO. EVN34M DTIC REPORT BIBLIOGRAPHY

> CONTINUED AD-A168 786

ARRETE, IMPLANTATION

IDENTIFIERS: (U) \*\*Nultiple signal processing, Signal subspace, Signal implantation, WUAFOSR2304AS, PEB1102F

AC-A183 795

STANFORD UNIV CA DEPT OF ELECTRICAL ENGINEERING

(U) Adaptive Filtering Algorithms with Automatic Gain Control,

NOV BB

PERSONAL AUTHORS: Shan, T. J. ; Kailath, T. ;

F49620-79-C-0058, AF0SR-33-0228 CONTRACT NO.

2304 PROJECT NO.

2 TASK NO. AFOSR MONITOR:

TR-86-0269

# UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Asilomar Conference, n19 8p, 6 Nov 85. :

gain Control (AGC) scheme for adaptive algorithms that are used extensivaly in many applications. The proposed AGC scheme is realized by using an estimate of the cross correlation between adaptive error and the input signal to control the gain of the adaptive algorithm. When the cross correllation is high, the gain is also high, and the adaptive algorithm is in and 'active' state When the error and the input signals are uncorrelated, the gain is near to zero, and the adaptive algorithm is put in an 'asteep' state. Thus, adaptive algorithms with such AGC 'asleep' state. Thus, adaptive algorithms with such AGC are insensitive to disturbances apparing on the system output measurement. Such disturbances can drive conventional adaptive algorithms away from the achieved adaptation. A fast, efficient algorithm for estimation of the cross correlation coefficient of adaptive error and input is also proposed. Keywords: Apaptive filtering algorithms, Automatic gain control, Cross correlation, Channel echo-cancellation, Near-end speech. In this paper we introduce an automatic ABSTRACT: (U)

ESCRIPTORS: (U) \*ALGORITHMS, \*AUTOMATIC DAIN CONTROL, \*ADAPTIVE FILTERS, COEFFICIENTS, CONTROL, CROSS CORRELATION, ERRORS, INPUT, MEASUREMENT, OUTPUT, SENSITIVITY, SIGNALS, REPRINTS

AD-A:98 795

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DITC REPORT SISL CORAPHY SEARCH CONTROL NO. EVN344

AD-A168 785 CONTINUED

AD-A168 764 20/14

IDENTIFIERS: (U) MUAFOSR2304AB, PEB1102F

MARYLAND UNIV COLLEGE PARK LAB FOR PLASMA AND FUSION ENERGY STUDIES

9/8

(U) Experimental and Theoretical Investigation of Microwave Millimeter Radiation from Hollow, Rotating Electron Beams.

DESCRIPTIVE NOTE: Final progress rept. 1 Dec 84-30 Nov 85,

MOV 85 109P

PERSONAL AUTHORS: Destier, William W.

CONTRACT NO. AFOSR-83-CO13

PROJECT NO. 2301

TASK NO. AB

MONITOR: AFUSR TR-86-0280

## UNCLASSIFIED REPORT

rotating electron beams in various conducting boundary systems has been pursued with the major emphasis being on the groduction of radiation from rotating electron beams in magnetron like conducting boundary systems. These experimental configurations are new recognized as an antirely new type of microwave tube, referred to in the literature as a Gyromagnetron, High Harmonic Gyrotron, or Cusp Injected Magnetron (Cusptron). The interest in this new device has centered around its potential to reduce the required magnetic field in microwave tubes by an order of magnitude by allowing operation at a high harmonic of the electron cyclotron frequency. Results from research on millimater and submillimater waves produced by rotating electron beams in rippled sagnetic fields, are also summarized in this report.

DESCRIPTORS: (U) \*ELECTRON BEAMS, \*MICROWAVE TUBES, \*MILLIMETER WAVES, \*GYROTRONS BUUNDARIES, CYCLOTRON WAVES, ELECTRONS, FREQUENCY, MAGNETIC FIELDS, MAGNETRONS, PRODUCTION, RADIATION, THEORY

IDENTIFIERS: (U) CUSPTRON(Cusp Injected Magnetron), PEG1102F, WUAF0SR2301A8

AD-A168 794

# SEARCH CONTROL NO. EVN34M DITIC REPORT BIBLIOGRAPHY

AD-A188 788

MICROELECTRONICS RESEARCH AND DEVELOPMENT CENTER ROCKNELL INTERNATIONAL THOUSAND DAKS CA

(U) LSI/VLSI Ion Implanted Planar GaAs IC Processing

Finel rept. 1 Jan 83-31 Mar 85, DESCRIPTIVE NOTE:

ď PERSONAL AUTHORS: Kirkpatrick, C.

MRDC41128.12FA REPORT NO.

F49620-83-C-0042, ARPA Order-3384 COLITICACT NO.

MOVITOR:

AF0SR TR-86-0304

# UNCLASSIFIED REPORT

The scope of this program was two-fold: (1) a primary consideration during this time. The gate array development involved two masked sets. The first was used to establish process and design criteria for gate arrays, as well as to fabricate a 8 × 8 multiplier. The second mask set was an extension of the previous work, and was used to fabricate gate arrays of the ik equivalent gate complexity. The Mayo Foundation provided the expertise for auto-routing and personalization techniques. (Author) to complete and stabilize the development of a planar fabrication process for high speed digital integrated circuits on 3-inch dads wafers, and (2) to utilize gate arrays up to the 14 equivalent gate level as the demonstration circuits for this process development. In addition to optimizing equipment and handling techniques for 3-inch dads wafers, the process development task concentrated on test chip characterizations, threshold voltage uniformity control, and materials evaluation. Plazoelectrically generated device non-uniformities were ŝ ABSTRACT:

CIRCUITS, DEMONSTRATIONS, ARRAYS, GATES(CIRCUITS), GALLIUM ARSENICES, ION IMPLANTATION, PLANAR STRUCTURES, FABRICATION, CHIPS(ELECTRONICS), HANDLING, MATERIALS, TEST AND EVALUATION, MASKS, THFTSHOLD EFFECTS, VOLTAGE . INTEGRATED CIRCUITS, HIGH RATE, DESCRIF FORS:

14/2 AD-A168 772 SOUTH CAROLINA UNIV COLUMBIA DEPT OF MATHEMATICS AND STATISTICS

(U) On Discrete Failure Models,

AUG 85

PERSONAL AUTHORS: Padgett, W. J. ; Spurrier, John D. ;

CONTRACT NO. AFDSR-84-0158

2304 PROJECT NO.

TASK NO.

TR-86-0315 AFOSR MONITOR:

# UNCLASSIFIED REPORT

PPLEMENTARY NOTE: Pub. In IEEE Transactions on Reliability, vR-34 n3 p263-256 Aug 85. SUPPLEMENTARY NOTE:

ABSTRACT: (U) In some situations, discrete failure 'time' distributions are appropriate to model 'lifetimes'. For example, a discrete distribution is appropriate when a piece of equipment operates in cycles and the number of cycles prior to failure is observed. This paper provides three families of discrete parametric distributions which likelihood estimation of parameters, survival probabilities, and mean lifetime is investigated. The are versatile in fitting increasing, decreasing, and constant failure rate models to oither uncensored or right-censored discrete life-test data. The maximum MLEs can be computed by simple numerical methods (Reprints)

DISCRETE DISTRIBUTION, FAILURE, MAXIMUM LIKELIHOOD ESTIMATION, MEAN, MODELS, NUMERICAL METHODS AND PROCEDURES, PARAMETRIC ANALYSIS, PROBABILITY, RATES, REPRINTS, SURVIVAL(GENERAL), TIME, PARAMETERS .LIFE TESTS, CONSTANTS, CYCLES DESCRIPTORS: (U)

PEB1102F, WUAFOSR2304A5 IDENTIFIERS: (U)

A-A168 786

# DIIC REPORT BIBLIDGRAPHY SEARCH CONTROL NO. EVN34M

AD-A168 785 3/1 20/6 AD-A168

(U) High Awular Resolution Stellar Interferometry.

ROCHESTER UNIV NY INST OF OPTICS

DESCRIPTIVE NOTE: Final rept. 1 Dec 80:30 Nov 84,

JUL 88 255P

PERSONAL ALTHORS: Dainty, J. C. ;

CONTRACT NO AFOSR-61-0003

PROJECT NO. 2311

1000

₹

TASK NO.

MONITOR: AF05R TR-66-0312

## UNCLASSIFIED REPORT

ABSTRACT: (U) This report summarizes the research carried out under the headings: Atmospheric turbulence, space-time structure of images, speckled speckle, detection of gratings behind diffusers, the phase problem, infrared speckle interferometry and phase conjugation.

DESCRIPTORS (U) \*INTERFEROMETRY, \*OPTICAL
INTERFERGMETERS, \*OPTICAL PROCESSING, \*ASTPONOMY,
ATMOSPHERG MOTION, DETECTION, DIFFUSERS,
GRATINGS GPECTRA), INFRARED RADIATION, SPACE PERCEPTION,
SPECILAR REFLECTION, OPTICAL INAGES, SPECULAR REFLECTION

IDENTIFIERS. (U) Phase exjugation, PE61102F WLAFOSR2311A1

AD-A168 753 19/4 20/10 20/

CALIFORNIA UNIV DAVIS DEPT OF APPLIED SCIENCE

(U) Fundamental Study of Dense-Fluid Detonation.

DESCRIPTIVE NOTE: Final rapt. Apr 81-Sep 85,

SEP 15 40

PERSONAL AUTHORS: Hoover, William G. ;

CONTRACT NO. F49820-81-C-0050, ARPA Order-4077

PROJECT NO. 2817

TASK NO. A3

MONITOR: AFOSR TR-86-0300

# UNCLASSIFIED REPORT

ABSTRACT: (U) Equations incorporating adiabatic, isothermal, and isoenergetic constraints are developed and applied to simulations of gases, itquids, and solids to obtained realistic fluid detonation wave profiles. The structure of uniaxially and hydrostatically compressed solids and the transfer of energy among translational internal molecular modes are studied. Novel computational internal molecular modes are studied. Novel computational mathods are developed simulating nonequilibrium processes using Cuass 'Principle of Least Constraint. Keywords: Detonation; Nonequilibrium Simulation; Hexanitrobenzene.

DESCRIPTORS: (U) \*DETOMATION WAVES, \*WOLECULAR FROPERTIES, \*FLUIDS, \*HIGH EXPLOSIVES, COMPRESSION, DYNAMICS, ENERGY TRANSFER, EQUATIONS, FLUIDS, GASES, NONEQULLIBRIUM FLOW, MANERICAL METHODS AND PROCEDURES, PROFILES, SIMULATION, SOLIDS, COMPUTERIZED SIMULATION, SHOCK MAVES, NITROGEN OXIDES, DEFORMATION, NITROBENZENES, CONTINUAR MECHANICS

(DEMTIFIERS: (U) PEB1102F, WUAFOSR2917A3

AD-A188 755

AD-A.168 753

CNCLASSIFIED

# SEARCH CONTROL NO. EVN34M

DTIC REPORT BIBLIOGRAPHY 12/1 6-A164 752

TEXAS UNIV AT AUSTIN DEPT OF ELECTRICAL AND COMPUTER ENDINEERING

Research in Adaptive and Decentralized Stochastic Control ĵ

Final rept. 15 Mar 84-14 Nov 85 DESCRIPTIVE NOTE.

3 33

Marcus, Steven I.; PERSONAL AUTHORS:

AF0SR-84-0089 CONTRACT NO.

2304 PROJECT NO.

₹ TASK NO. AFCSR HOMITOR:

TR 68-0295

## UNCLASSIFIED REPORT

of aspects of stochastic systems. The problem of adaptive control of priority assignment in quanting systems was solved. A distance-measures approach to the problem of approximation and identification of quenting systems was studied. A problem of adaptively controlling a discounted-revard finite state Markov decision procise was solved. Major new results were obtained for the problem of adaptive control with incomplete observations. In Significant progress was uade in a number particular, the author studied in depth a problem of adaptive control with incomplete observations. In which the state Narkov process. In addition, earlier work on asymptotic approximations in non-lines. filtering was completed. (Author) ŝ MSTRACT:

SCRIPTORS: (U) \*ADAPTIVE CONTROL SYSTEMS; \*STOCHASTIC CONTROL, APPCHAINATION(MATHEMATICS), ASYMPTOTIC SERIES, DECEMTRALIZATION, FILTERS, IDENTIFICATION SYSTEMS. NONLINEAR SYSTEMS, QUEUEINA THEORY, STOCHASTIC PROCESSES DESCRIPTORS: (U)

WUAFOSR2304A1, PEB1102F DEMTIFICAS: (U)

43-A158 752

20/12 AD-A168 781 CALIFORNIA UNIV SAN DIEGO LA JOLLA DEPT OF ELECTRICAL ENGINEERING AND COMPUTER SCIENCES

Research on Materials and Components for Opto-Electronia Signal Processing. ŝ

DESCRIPTIVE NOTE: Interim rept. 1 Oct 84-30 Nov 85

DEC 85

RSONAL AUTHORS: Chang, William S.; Kellner, Albert L. Van Eck, Timothy; Walpita, L. M.; Wieder, H. H.; PERSONAL AUTHORS:

AF05R-84-3388 CONTRACT NO.

PROJECT NO.

TASK NO.

TR-86-0283 AFOSR MONITOR:

# UNCLASSIFIED REPORT

STRACT: (U) Electroasbsorption and electrorefraction properties of heterostructures and multiple quantum-well structures in III-Y semiconductors were investigated for spatial modulation and optical fibercommunication applications. Optical waveguides are fabricated and evaluated. A new device, the gate controlled photo diode (OCPD) has been conceived and demonstrated. It has potential applications in optical signal processing. Keywords: III-V Compound semiconductros; Electroabsorption; Electrorefraction; and Gated photo ABSTRACT: di ode

DESCRIPTORS: (U) \*ELECTROOPTICS, \*PHOTODIODES, \*SEMICONDUCTORS, INDIUM PHOSPHIDES, GALLIUM ARSENIDES, SEMICONDUCTORS, INDIUM PHOSPHIDES, GALLIUM ARSENIDE, FIBER OPTICS, CONTROL, GATES(CIRCUITS), GROUP III COMPONNOS, GROUP V COMPOUNDS, OPTICAL PROCESSING, SIGNAL PROCESSING, MATERIALS, OPTICAL WAVEGUIDES, STRUCTURES, MODULATION, SPATIAL DISTRIBUTION

urmiffers: (U) Gated photodioder, Electroabsorption. Electrorefraction, Quantum valls, MQM(Multiple Quantum Wells), Heterostructures, Gallium indium arsenides, MUAFOSR239581, PEG1102F DENTIFIERS:

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EVN34M 166 PAGE

# SEARCH CONTROL NO. EVN34M DITIC REPORT BIBI TOGRAPHY

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AD-A168 749

13/13 NORTH-MESTERN UNIV EVANSTON IL 20/11 AD-A186 748

IDENTIFIERS: (U) Indentation, Indenters, WUAFOSR230281. PE61102F ISOTROPISM, IMPACT, LOW VELOCITY, LENGTH, BEHAVIOR RESPONSE, INTEGRAL TRANSFORMS, ROTATION (U) Impect Response of Structures--Global Local Approach.

Interia rept. 1 Oct 83:30 Nov 84. DESCRIPTIVE NOTE:

= DEC 84. PERSONAL AUTHORS: Keer, Leon M.

AF058-82-0330 CONTRACT NO.

2302 PROJECT NO.

TASK NO.

TR- 86-0207 AF OSR HONITOR:

# UNCLASSIFIED REFORT

investigation was made on the law velocity impact on a circular plate by a rigid intenter. The plate response to impact shows some of but not all of the similar problem for a beam. The local contact stresses were developed from an elasticity theory, thile time global stresses were the both the local behavior near the inderter, as well as the global beam behavior. The method of analysis uperposes an infinite layer solution derived through the use of integral trans.orms with a pure ferring beam theory solution. Local indenter wiresses, as well as displacements and rotations are computed for each case and plotted for various ratios of contact width to beam length, and for various positions of the indenter. Where obtained through a local-global technique, which accounts beam of finite langth under the action of frictionless sylindrical and flat indenters is studied. Solutions are possible, the results are compared to Hertz theory of contact stresses and to beam displacement and rotation solutions. LOW VELOCITY IMPACT ON A CIRCULAR PLATE: An The response of an isotropic cantilever obtained from plate theory

LOADING, \*CANTILEVER BEAMS, STRESS ANALYSIS, METAL PLATES, LOADING, \*CANTILEVER BEAMS, STRESS ANALYSIS, METAL PLATES, CADMIUM, MALWESTUM, "AMINATES, COMPOSITE MATERIALS, DISPLACEMENT, CYLINDRICAL BODIES, ELASTIC PROFERTIES, THEORY, GLOBAL, STRESSES, LAYERS, SOLUTIONS/GENERAL), DESCRIPTORS

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# SEARCH CONTROL NO. EVN34M DTIC REPORT BIBLIOGRAPHY

CORT INUED

AD-A168 745

DESCRIPTORS:

CALIFORNIA UNIV IRVINE COLL OF MEDICINE 6/10 **8**/10 AD-A168 748

(U) Reinforcement Delay of One Second Saverely Impairs Acquisition of Brain Self-Stimulation,

ESCRIPTORS: (U) \*STIMULATION(PHYSIOLOGY), \*BEHAVIOR, \*RESPONSE, \*DELAY, CLES(STIMUL), NEUROLOGY, ACQUISITION, BRAIN, SIMULATION, CONTROL, GROUP DYNAMICS, LEARNING, RAYS, DELIVERY, INTERVALS, TIMING DEVICES, LOW RATE, SECONDARY, REPRINTS

Reverds, Reinforcement delay,

WUAF0SR2312A1, PEB1102F

3

IDENTIFIERS:

Black, Joel ; Belluzzi, James D. ; Stein,

PERSONAL AUTHORS: Larry :

F48820-81-K-0018 CONTRACT NO.

2312 PROJECT NO.

TASK NO.

AF05R TR-86-0298 MONITOR:

# UNCLASSIFIED REPORT

Pub. in Brain Research, v359 p113-119 SUPPLEMENTARY NOTE:

reinforcement) and by eliminating consummatory responses parmits pracise temporal control of the interval between the operant response and reinforcement. Olfierent groups were trained in daily 1-b sessions for brain simulation reinforcement at on of 4 delay intervals (1, 2, 3, or 8 s. Rosponses made during the delay interval were not reinforced and reset the delay interval were not required to space responses—according to a delayed reinforcement of low rates (DEL) schedule—for an interval corresponding to one of the delay of reinforcement intervals. The DEL schedule—eor an opportunities for reinforcement and non-reinforcement. At The effect of delayed rainforcement on the acquisition of lateral hypothalamic self-stimulation was investigated. Brain stimulation reinforcement minimizes cues associated with reinforcement delivery (secondary all intervals, rats trained with delayed reinforcement had significantly lover bar-press rates than controls trained with immediate reinforcement under DRL. The results indicate that delays even as short as 1 s markedly impede the acquisition of self-stimulation behavior. Keywords: Revard and Learning Ĵ ABSTRACT:

AD-A168 745

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# SEARCH CONTROL NO. EVN34M DITIC REPORT BIBLIDGRAPHY

MARYLAND UNIV COLLEGE PARK DEPT OF COMPUTER SCIENCE

AD-A186 736

(U) Evaluations of Software Technologies: Testing, CLEANROUM, and Me.rics.

DESCRIPTIVE NUTE: Technical rept.

1967 EAV :: Selby, Richard W. . Jr. PERSONAL AUTHORS:

TR-1500 REPORT NO. F48620-80-C-0001, NSG-5123 CONTRACT NO.

2304 PROJECT NO.

3 TASK NO.

TR 88-0278 AFUSR MONITOR:

UNCLASSIFIED REPORT

evaluating software technologies couples software methodology evaluation with software measurement. The approach is applied in-depth in (1) Software Testing Strategies A 74-subject study, including 32 professional programmers and 42 advanced university students, compared code reading, functional testing, and structural testing in a fractional factorial design. (2) Cleanroom Software Development Fifteen three-person teams separately built a 1200-line message system to compare Cleanroom software development (in which software is developed completely off-line) with a more traditional approach. (3) Characteristic Software Metric Sets: In the NASA S.E.L. professionals, code reading detected more software faults and had a higher fault detection rate than did functional or structural testing. With the students, the 3 techniques were not noticeably different in the number of production environment, a study of 65 candidate product and process measures of 652 modules from six (51,000 -112 software confountity metrics. The approach described for quantitatively evaluating software technologies was effective in a variety of problem domains. With the faults detected or in the fault detection rate. Code A 7-step approach for quantitatively 000 line) rojects yielded a characteristic set of ŝ ABSTRACT:

GIANI NOS AD-A168 738

completely off-line. The Cleannoom teams' products met system requirements more completely and succeeded on more operational test cases than did those developed with testing detected more control faults than did the other methods. Nost developers using the Cleanroom software reading detected more interface faults and functional development approach were able to build systems traditions? approach.

FAMILY, INTERFACES, MEASUREMENT, OPERATIONAL BEFECTIVENESS, RATES, STUDENTS, TEAKS(PERSONMEL), TEST AND EVALUATION, TEST METHODS, STRUCTURAL AMALYSIS, SCRIPTORS: (U) +COMPUTER PROGRAMS, +ERROR ANALYSIS, +COMPUTER PROGRAMMING, DETECTION, FACTORIAL DESIGN, PROGRAMMERS DESCRIPTORS:

IDENTIFIERS: (U)

AD-A188 738

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MYCNA? 169 PAGE

# SEARCH CONTROL NO. EVN34M DIIC REPORT BIBLIDGRAPHY

AD-A168 696 UNIVERSITY OF SOUTHERN CALIFORNIA LOS ANGELES ELECTRONIC **E**/3 SCIENCES LAB AD-A184 728

(U) doint Services Electronics Program - USEP. Research in Electronics.

Finel rept. 1 Apr 81-31 Mar 85. DESCRIPTIVE NOTE:

Stelef, William H. . PERSONAL AUTHORS:

17 1P

F48620-81-C-0070 CONTRACT NO.

2306 PROJECT NO.

TASK NO.

TR 88-0:78 AFUSR HONE TOR:

# UNCLASSIFIED REPORT

STRACT: (U) This final technical report susmarizes ecceptishes to and progress of 18 work units (projects) for research performed during the reporting period under the units to vices Electronic Program by the USC Electronic Sciences Laboratory, Keywords: Electronic materials; Schooluctors; Quantum electronics; Lasers; Communications; Signal processing; Computers; and Catels. ABSTRACT:

ELECTRONIC ( ALIPMENT, LABORATORIES, LASERS, MATERIALS, QUANTUM ELECTRONICS, SEMICONDUCTORS, SIGNAL PROCESSING, CONTROL 8757-MS DESCRIPTORS: (U)

PE61102F (DENTIFIERS: (U)

E/0

STANFORD UNIV CA DEPT OF ELECTRICAL ENGINEERING

(U) Continuous-Time Discrete-Order Lattice Filters.

DESCRIPTIVE NOTE: Rept. for 1984-1985

APR 86

PERSONAL AUTHORS: Lev-Art, Henoch;

NYO14-85-K-0612, AF0SR-83-0228 CONTRACT NO.

2304 PROJECT NO.

2 TASK NO. MONITOR:

AF0SR TR-88-0271

# UNCLASSIFIED REPORT

Pub. in ICASSP Conference, 4p Apr 86. SUPPLEMENTARY NOTE:

ABSTRACT: (U) A recursive least squares (RLS) adaptive lattice algorithm for processing of continuous time signals is presented. It has the same structure as the discrete-time RLS lattice, nummily a cancade of two input/ two output sections with a single delay element per section. However, while the discrete-time scheme involves a fundamental unit of time (i.e., the sampling period of the signal), which determines both the duration of the delay and the rate of gain updating, our scheme involves a delay of arbitrary duration and continuously varying gains. The rate of parameter updating in the continuous time lattice configurations is essentially independent of the bandwidth and center frequency of the processed signal. Consequently, the gain-update module of the proposed algorithm can be implemented with slow devices (as with digital handware) whereas the signalpath filtermust match the frequency characteristics of the processed signal, keywords: continuous time; discrete order; lattice filters; adaptive lattice filters; signal path filters; Reprints. ABSTRACT:

DESCRIPTORS: (U) \*ADAPTIVE FILTERS, ALGORITHMS,
BANDHIDTH, DISCRETE DISTRIBUTION, FREQUENCY, GAIN, INPUT,
LATTICE DYNAMICS, LEAST SQUARES METHOD, OUTPUT,
PARAMETERS, PATHS, RATES, RECURSIVE FUNCTIONS, REPRINTS.

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SEARCH CONTROL NO. EVN34M DITIC REPORT BIBLIDGRAPHY

> CONTINUED AD-A168 886

SAMPLING, SIGNALS, TIME, TIME SIGNALS, SIGNAL PROCESSING

IDENTIFIERS: (U) \*Analog filters, PES1102F

AD-A184 691

MONTH TEXAS STATE UNIV DENTON CENTER FOR APPLIED QUANTLINGLECTRONICS

(U) Study of VLV Generation by Coherent Resonant Frequency Mixing in Metal Vapors.

DESCRIPTIVE NOTE: Final rapt. 1 Dot 82-31 Dot 84,

= = PERSONAL AUTHORS: Diels, Jean-Claude ;

AFOSK-82-0332 CONTRACT NO.

2301 PROJECT NO.

4 TASK NO.

AF0SR TR-88-0303 MONITOR:

## UNCLASSIFIED REPORT

(two, four, or more) are exploited to enhance up frequency conversion rates. Simultaneously, the property of reversibility of coherent interaction is used to minimize the resonant losses (two-photon, four-photon absorption). A source of tunable, near bandwidth limited pulses, of more than a millijoule energy per pulse has been developed. A new scheme of computer controlled data acquisition made it possible to analyze, for the first time, the temporal coherence properties of the acquisition and it possible to analyze, for the first pulses (at a rate of 20 pps). The method of the acquisition accordances, leading to the strate accordance and accordances and active order first measurement of the phase angle of the third order susceptibility. Experimental demonstration of cuberent enhancement of harmonic generation was made. A conversion efficiency of 1% was echieved for third harmonic generation in lithium vapor, which is the maximum efficiency predicted by the theory for this system. ABSTRACT: (U)

DESCRIPTORS: (U) \*\*FREQUENCY CONVERSION, \*THIRD HARMWIC GENERATION, \*VACUUM ULTRAVIOLET RADIATION, \*TWO PHOT; ABSOMPTION, AUTOCORRELTION, BANDWIDTH, CONFERNCE COMPUTERS, CONTROL, DATA ACCUISITION, HARMONIC GENERATORS, INTERFEROMETRY, LIMITATIONS, LITHIUM, METAL.

AD-A168 681

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AD-A168 896

DTIC REPURT BIBLIDGRAPHY SEARCH CONTROL NO. EVN34M

AD-A168 881 CONTINUED

VAPORS, MIXING OPTIMIZATION, PHOTONS, PULSE AMPLIFIERS, PULSES, RESCUENCE, RESONANCE ABSORPTION

IDENTIFIERS: (S) \*Multiphoton absorption, fraquency mixing, PEGIICIF, MUAFOSRI301A1

AD-A168 685 9/3 20/6

OPTICAL SOCIETY OF AMERICA MASHINGTON D C

(U) Picosecond Electronics and Optoelectronics Head at Incline Village, Nevada on 13-18 March 1885.

DESCRIPTIVE NOTE: Final rapt. 1 Feb 88-4 Feb 86,

FEB 86 136P

PERSONAL AUTHORS: quirm, Jarus W.;

CONTRACT NO. AFOSR-85-0105

PROJECT NO. 2305

FASK NO. 82

MONITOR: AFOSR TR-88-0157

# UNCLASSIFIED REPORT

ABSTRACT: (U) The purpose of the meeting was to provide a forum for people working in the different areas of ultrafast electronics and optoelectronics and sharing a common interest in the understanding and improvements of the electronic properties of semiconductors and superconductors, the physics of ultrafast devices, their applications and methods of measurements. (Author)

DESCRIPTORS: (U) \*ELECTRODPTICS, \*SEMICOMOLICIR LASERS.
\*SYMPOSIA, \*QUANTUM ELECTRONICS, \*PULSED LASERS.
ELECTRONIC EQUIPMENT, ELECTRONICS, HIGH RATE,
SEMICOMOLICIORS, SUPERCOMOLICIORS, GALLIUM ARSENIDES,
\*MOTOELECTRIC EMISSION, INDIUM PHOSPHIDES, TRANSPORT
PROPERTIES, CHARGE CARRIERS, OPTICAL CIRCUITS, INTEGRATED
CIRCUITS, MODE LOCKED LASERS

IDENTIFIERS: (U) Picosecond time, Aluminum gallium arsenide lasers, MUNR373118, PE81102F, MUAFOSR230582

AD-A188 681

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AD-A168 685

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PAGE 172 EVNJ4M

# SEARCH CONTROL NO. EVN34M DITIC REPORT BIBLIDGRAPHY

12/1 - 178 BIA-04

(U) DFR (Decreasing Failure Rate) Property of First Passage Times and its Preservation under Geometric ARIZONA UNIV TUCSON DEPT OF NATHEMATICS Compounding

Technical rept... DESCRIPTIVE NOTE:

Shanthikumar, J. G. ; PERSONAL AUTHORS:

AF0SR-44-020 CONTRACT NO.

2304 PROJECT NO.

TASK NO.

AF05# TR-88-0278 MONITOR:

# UNCLASSIFIED REPORT

served during a busy period in an WG/1 queue with increasing tailure rate service times is DFR. Recent results of \$22411 (1888) and the closure property of 1.1. OFF random variables under geometric compounding are combined to show that the stationary valing time in a G/1 (M/G/1) queue with DFR (increasing mean residual) service times is DFR. We also provide sufficient of a discrete time Markov chain with state space (0,1,...) is totally positive of order two (PP2), the first passage time from stare i to state 0 has decreasing failure rate (DER). This result is used to show that (i) the sum of a geometric mash (i)..., geometric compound) of 1.1.d. DFR random variables is DFR and (ii) the number of customers conditions on the inter-renewal times under which the renewal function is concave. These results shed some light on a conjecture of Brown (1881). (Author) SCRIPTORS: (U) \*QUEUEING THEORY, DISCRETE DISTRIBUTION, FAILURE, GECHETRY, MARKOV PROCESSES, RANDOM VARIABLES, RATES, TIME, TAANSITIONS, FUNCTIONS(MATHEMATICS), KERNEL DESCRIPTORS:

WUAF0SR2304A5, PEB1102F DENTIFIERS: (U)

UNCLASSIFIED

1/4 20/3 AD-A168 648 CARNEGIE-WELLON UNIV PITTSBURGH PA MELLON INST OF SCIENCE (U) Vapor Growth and Epitaxy/American Crystal Growth 1884: Proceedings of the Combined Meeting ICVGE/ACCG-6 Held in Atlantic City, NJ on 18-20 July 1884.

Final rept. 1 Jul 84-30 Jun 85 DESCRIPTIVE NOTE:

6336 FEB 80 ERSONAL AUTHORS: Schieber, M.; Keldis, E.; Shaw, D. W.; Stringfellov, G. B.; Van Den Berg, L.; PERSONAL AUTHORS:

AF05R-84-0163 CONTRACT NO.

2306 PROJECT NO.

TASK NO.

AF0SR TR-86-0292 MONITOR:

## UNCLASSIFIED REPORT

Availability: Elsavier Science Publishing Co., 52 Vanderbilt Avenue, New York, NY 10017, HC \$246.00. (No copies' furnished by DIIC/NIIS).

Defects and characterization; Welt growth of oxides; Melt growth of semiconductors; Flux growth; Solution and tydrothermal growth; Industrial crystallization; Theory and Simulations; III-V compounds; Silicon and silicon compounds; II-VI and IV-VI compounds (for IR and X-ray detactors); Solar cells; Multilayer structures; Oxides; Alloys, and Miscellaneous; and Characterization. Gravitational effects and charactarization of crystals; Mechanisms of grouth; Liquid phase epitaxy; Molecular base epitaxy; Vapor phase epitaxy and chemical vapor deposition; Epitaxy with organometallic transport; Growth of large bulk crystals from vapor; Photovoltaics and solar cells; Meterostructures and characterization; International Conference on Vapor Grouth and Epitaxy (ICVGE-8) on July 18-20, 1884. Data presented at the Conference pertained to: Heat and mass transfer; STRACT: (U) The American Association for Crystal Grouth (AACG) held its Sixth American Conference on Crystal Grouth (AACG-8) together with the Sixth ABSTRACT:

AD-A168 648

# SEARCH CONTROL NO. EVN34M DIIC REPORT BIBLIOGRAPHY

CUNTINUED AD-A166 648

DESCRIPTORS:

AD-A188 842

\*\*SYMPOSE: (U) \*\*INDUSTRIAL RESEARCH, \*\*EPITAXIAL GROWTH, \*\*SYMPOSIA, \*\*C\*\* STAL GROWTH, ALLOYS, CHEMICAL REACTIONS.
\*\*VAPOR DEPOSIT \*\*\* CAYSTALS, GRAVITY, GROUP III COMPOUNDS.
GROUP V COMP. \*\*S. INTERNATIONAL, LIQUID PHASES,
MASS TRANSFER, S. \*\*TURES, CHYSTALLIZATION, BULK MATERIALS,
MASS TRANSFER, \*\*\*\*S. \*\*TAYERS, STRUCTURES, OXIDES, SILICON,
SOLAR CELLS, \*\*\*\*SPARSES, MOLECULAR BEANS,
ORGANOMETALLIS \*\*\*\*PRASES, MOLECULAR BEANS,
ORGANOMETALLIS \*\*\*\*\*PRASES, MOLECULAR BEANS,
SILICON COMPCALS, VAPORS, DETECTORS, HEAT TRANSFER, X
RAY APPARATUS

PE&1 102F IDENTIFIERS: (U)

6/3 9 0 BROWN UNIV (ROVIDENCE RI LEFSCHETZ CENTER FOR DYNAMICAL SYSTEMS

Modeling Insect Dispersal and Estimating Parameters When Mark-Release Techniques May Cause Initial Disturbances, Ξ

**2**00 2 PERSONAL AUTHORS: Banks, H. T. ; Faratva, P. M. ; Lamm, P. K. ;

AF0SR-81-0198, NSF-MCS82-05335 CONTRACT NO.

2304 PROJECT NO.

7 TASK NO.

AF0SR TR-86-0261 MONITOR:

## UNCLASSIFIED REPORT

Pub. in Jul. of Mathematical Biology, SUPPLEMENTARY NOTE: v22 p258-277 1985.

MATRACT: (U) We consider the problem of quantitatively modeling movements of marked flem beatles in cultivated arrays of the cole crop, collards (Brassica oleracese). Methods for the estimation of temporally and spatially dependent parameters in general dispersal models are outlined and a summary of our findings using these methods with flem beatle data is given. ABSTRACT: (U)

DESCRIPTORS: (U) \*VEGETATION, \*ECOLOGY, \*COLEOPTERA, MOTION, ESTIMATES, PARAMETERS, DISPERSING, INSECTS, MODELS, SIPHOMAPTERA, REPRINTS

PE61102F IDENTIFIERS: (U)

# SEARCH CONTROL NO. EVN34M DIIC REPORT BIBLIOGRAPHY

7/ AD-AIR PET STANFORD UNIV CA DEPT OF ELECTRICAL ENGINEERING

Adaptive Beautoraing for Coherent Signals and Interference

Rept. for 1984-1985, DESCRIPTIVE HOTE:

= 3

PERSONAL AUTHORS: Shan, Tie-Jun ; Kailath, Thomas ;

DAAGAB-81-K-0067, AF05R-83-0228 CONTRACT NO.

2304 PROJECT NO.

Z TASK NO. AFOSR HONITOR:

TR-80 0285

## UNCLASSIFIED REPORT

ACOUSTICS, Speech, and Signal Processing, VASSP-33 n3 p627-838 Nn 85. SUPPLEMENTARY NOTE:

astract: (U) In this paper we introduce a new adeptive array beamformer able to work well even when the desired signal and the interference are coherent. The present adeptive beamformers fail to operate in these cases. The presents of all to operate in these cases. The predictions array apport the theoretical predictions a revolute facilities the theoretical signals, sensor elements, Receiver noise, Spatial dither, and Single snapshot. ABSTRACT: (U)

ESCRIPTORS: (U) \*RECEIVERS, \*BEAM FORMING, \*ARRAYS, \*NOISE, \*ADAPTIVE SYSTEMS, ALGORITHMS, SIGNAL PROCESSING, INTERFERENCE, EMERGY, COMERENCE, LINEAR SYSTEMS, DISTORTION, JAMAING, REPRINTS DESCRIPTORS:

SENTIFIERS: (U) Spatial dither, Spectral estimation, snapshots, Weighting vectors, Frost beamformers, PEGI102F DENTIFIERS:

6/3 AD-A168 627 STANFORD UNIV CA INFORMATION SYSTEMS LAB

(U) Mash-Connected Processor Arrays for the Trans.tive Closure Problem,

DEC 88

Rso, Sailesh K.; Citron, Todd ; kailath, PERSONAL AUTHORS: Thomas :

AFUSR-83-0228 CONTRACT NO.

2304 PROJECT NO.

2 TASK ND. Arosr TR-86-0264 MONITOR:

## UNCLASSIFIED REPORT

ASSTRACT: (U) The main purpose in this paper it to lay a theoretical foundation for the dasign of mash connected processor arrays for the trancitive closure program. Using a simple pathalgebraic formalistion of the problem and observing its similarity to certain well known secontaing problems that occur digital signal processing. We show how to draw/upon existing techniques from the signal processing literature to derive regular iterative algorithms for datamining the transitive closure of the algorithms for datamining the transitive closure of the signal processing literature to derive closure of the signal processing literature to derive closure of the synthesized on mesh-connected processor arrays that can vest number of wesh connected processor arrays that can be exported in the literature for this problem are shown to be special cares. Keywords: Mesh connected shown to be special cares. Keywords: Mesh connected and sectificative problems: Systolic architectures; and arrays; and arrays; and Iteration algorithm.

ESCRIPTORS: (U) GRAPHS, GARRAYS, ALGORITHMS, CLOSURES, DIGITAL SYSTEMS, ITERATIONS, SIGNAL PROCESSING, MESH DESCRIPTORS: (U)

Systo to arrays IDENTIFIERS: (U)

AD-A168 627

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AD-A168 641

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# SEARCH CONTROL NO. EVN34M DITIC REPORT BIBLIDGRAPHY

POLYTECHNIC 1451 OF NEW YORK FARMINGDALE LONG ISLAND 20/8 AD-A100 624

CRADUATE CENTER

(U) hillimater Wave Generation by Relativistic Electron

DESCRIPTIVE NOTE: Final rept. 1 Oct 82-30 Sep 85

470 10V 83 Kuo, Spancer S., ;Cheo, Bernard R., ;Tfong, PERSONAL AUTHORS:

K. K. ;Whang, H. H. ;

POLY-15-011

REPORT NO.

AF USR-13-0001 CONTRACT NO.

2301 PROJECT NO.

TASK NO.

AFDSR TR-86:03(46 MONITOR:

UNCLASSIFICO REPORT

and characteristics is employed to analyze the problem of strong turbule of in unagnatized plasmas. The effect of resonance brozening and perturnation expansion are treated simulationed by Without time securities. The renormalization procedure is used in the transformed Vissov equation to analyze the turbulence and to derive explicitly a diffusion equation. Analyses are extended to imbosogeneous picses and the relationship between the transformation and penderosotive forco is obtained. ABSTRACT: (U)

EQUATIONS, ELECTRON BELAS, RELATIVITY THEORY, MACHETICATION, C.FFUSION, MILLIMETER MAVES, WAVE PROPAGATION, F. PURBATIONS, PARTIAL DIFFERENTIAL EQUATIONS, TR. PRANTIONS(MATHEMATICS), MASERS, HEATING \*TURBULENCE, \*PLASMAS(PHYSICS), CYCLOTRON' RESIDENCE, GYROTRONS DESCRIPTORS: (U)

ENTIFIERS: (U: Viason equations, Plasma instabilities, Viasov equations, PEB1102F, WUAFOSR2301A8 DENTIFIERS:

13/1 AD-A168 623 STANFORD UNIV CA INFORMATION SYSTEMS LAB

(U) lamstance-Domain Levison Algorithms.

DESCRIPTIVE NOTE: Rept. for 1984-1985,

APR BG

PERSONAL AUTHORS: Bistri'z, Y. ; Lev-Ari, H. ; Kailath, T. ;

AF05R-83-0328 CONTRACT NO.

PROJECT NO.

2304

2 TASK NO.

TR-86-0273 AFOSR MONITOR:

UNCLASSIFIED REPORT

Pub. in ICASSP Conference, Apr 88

SUPPLEMENTARY NOTE:

ASTRACT: (U) jeveral computationally extra-e;ficient versions the \_\_vinson algorithm are presented. The new versions require half the number of multiplications and the same number of additions as the conventional form of the Levinson algorithm. The seving is achieved by using three—(rather than two) term recursions and probagating them in an Impedance/Admittance domain rather than the conventional westering domain. Our result apply both to Toeplitz and to close to Toeplitz systems. Moreover they provide a general method for reducing computational requir/ments in various recursive algorithm, e.g. odaptive least-square lattice algorithms. (Author)

DESCRIPTORS: (U)

Levinson algorichm, PE61102F. IDENTIFIERS: (U) WUAFOSR2304A5

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EVN34M 176

# SEARCH CONTROL NO. EVN34M DITC REPORT BIBLIDGRAPHY

12/1 AD-A108 822

BTATE UNIV OF NEW YORK AT BUFFALD ANHERST DEPT OF MECHANICAL AND AFROSPACE ENTINEERING

PFB1102F, WUAFOSR2304A1

3

IDENTIFIERS:

CONTINUED

AD-A168 622

(U) Qualitativ. Results for Distributed Systems with Discrete and Stiffness with Application to Control.

DESCRIPTIVE MOTE: Final mapt. 1 Jul 82-30 Jul 85,

AUG BE

PERSONAL AUTHORS: Inman, Daniel J.;

AF0SR-82-0242 CONTRACT NO.

2304 PROJECT NO.

7 TASK NO.

AF05R MONITOR:

TR-88-0286

# UNCLASSIFIED RE ORT

STRACT: (U) Distributed parameter models of large flexible space structures subject to various control techniques have been studied. The main thrust has been to develop qualitative results which are independent of truncation of discretization approaches by treating the fully distributed model. Exphasis has been on controlling the transcient response of non-conservative linear developed between the stiffness and damping operators which when satisfied guarantee that the response of a selfadjoint system will be uniformly exponentially stable. In addition, it has been shown that the inequalities insure that finite dimensions! versions of the control. Inequality developed constitues a generalization of the concept of underdamping normally used with single degree of freedom systems and provides a physical interpretation of the result. partial differential aquation models of such structures subject to a few point actuators, inequalities have been distributed system subject to compact feedback as the number of scales in the finite model increases. The problem converge to an optimal control of the fully ABSTRACT: (U)

DESCRIPTORS: (U) \*SPACECRAFT, \*FLEXIBLE STRUCTURES, \*MATHEMATICAL MODELS, CONTROL, DAMPING, DISTRIBUTION PARAMETERS, STIFFNESS

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177

# DTIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN34M

AD-A168 621 9/3

TEXAS UNIV AT AUSTIN, DEPT OF ELECTRICAL AND COMPUTER ENGINEERING

(U) The Structure of Nonlinear Control Systems Possessing Symmetries,

MAR 85 125

PERSONAL AUTHORS: Grizzle, Jessy W. ; Marcus, Steven I. ;

CONTRACT ND. AFOSR-84-0089

PROJECT NO. 2304

NONITOR: AFSR

TASK NO.

TOR: AFSR TR 86-0262

# UNCLASSIFIED REPURT

SUPPLEMENTARY MOTE: Pub. IEEE Transactions on Automatic Control, vAC-30 n3 p248-288 Mar 85. destroys (U) A concept of symmetry is defined for general notitions control systems. It is shown, under various technical conditions, that nonlinear control systems with symmetries admit local and/or global decompositions in terms of lower dimensional subsystems and feedback loops. The structure of the individual subsystems is dependent on the structure of the symmetry group; for example, if the symmetry group is Abelian, one of the decomposition is that the state-space dimensions of the such; stems sum to the state-space dimensions original system. (Reprints)

DESCRIPTORS: (U) \*CONTROL SYSTEMS, \*MONLINEAR SYSTEMS, DECOMPOSITION, PEEDBACK, GLOBAL, LOCPS, REPRINTS, SIZES(DIMENSIONS), SYMMETRY, SYSTEMS ENGINEERING

IDENTIFIERS: (U) PEG1102F, WUAFOSR2304A5

A)-A168 618 7/6

OPTICAL SOCIETY OF AMERICA WASHINGTON D C

(U) Topical Meeting on Midrophysics of Surfaces, Beams, and Adsorbates Held at Santa Fe, New Mexico on 4-6 February 1885.

DESCRIPTIVE NOTE: Final technical digest,

DEC 85 123P

PERSONAL AUTHORS: Quinn, Jarus W.

CONTRACT NO. AFOSR-85-0018

PROJECT NO. 2303

TASK NO. A2

MONITON: AFOSR TR-88-0309

## UNCLASSIFIED REPORT

Surfaces, Beams, and Adsorbates was organized within the interdisciplinary area of molecule/surface interactions induced, or studied, by laser and ion beam sechniques. Especially emphasized was the molecular physics and electro magnetism of beam activated chemical reactions for applications in fabrication of semiconductor devices, in photocatalysis, and in optical recording Emphasis was on the lacer spectroscopy of molecular collision and reaction processes on surfaces, new sensitive or high resolution spectroscopies for studies of adsorbates, and optical methods applied to surface characterization.

DESCRIPTORS: (U) \*PHUTDACTIVATION ANALYSIS.
\*PHOTOCHEMICAL REACTIONS, \*LASER BEAMS, \*PHOTOCHEMICAL REACTIONS, \*ADSUBBATES, LASER BEAMS, \*PHOTOCHEMICAL REACTIONS, \*ADSUBBATES, LASER TARGET INTERACTIONS, SYMPOSIA, PARTICLE COLLISIONS, MOLECULAR BEAMS, SURFACE CHEMISTRY, ETCHING, IOM BOMBARDMENT, LASER INDUCED FLUORSCENCE, RAMAN SPECTRA, EPITAXIAL GCOWTH, VAPOR DEPOSITION, HIGH PESOLUTION, SPECTROSCOPY, LASERS, SUBFACES, MOLECULAR STRUCTURE, RESOLUTION, CATALYSIS, FABRICATION, SEMICONDUCTOR DEVICES, ION BEAMS, INTERACTIONS, OPTICAL PROPERTIES, RECORDING SYSTEMS

IDENTIFIERS: (U) Photoacoustic spectroscopy, Raman

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SEARCH CONTROL NO. EVN34M DIIC REPORT BIBLIDGRAPHY

AD-1166 617

spectroscopy, PEG1102F, MUAFUSR2303A2 CONTINUED

AD-A188 818

-NDIANA UNIV AT BLOOMINGTON DEPT OF COMPUTER SCIENCE

(ii) Probabilistic Analysis of Algorithms for NP-Complete Problems.

DESCRIPTIVE NOTE: Annual scientific rept. (Final) 30 Sept 84-28 Sep 85.

DEC .....

PERSONAL AUTHORS: Franco, John ;

AFOSR-84-0372 CONTRACT NO.

230A PROJECT NO.

2 TASK NO. AF0SR TR-86-0310 MONITOR:

## UNCLASSIFIED REPORT

we mean determine whether a solution to a given instance of an MP-complete problem axists where, for the problems we have considered, a solution is an assignment of values to a list of variables which cause some predicate to be true. We do not consider actually finding solutions when they exist since doing so adds unnecessary complexity to the statement of the algorithms: the algorithms we consider can all be modified to find solutions without significantly altering performance. MP-complete problems are found in Crytology, Operations Research, Artificial Intelligence, Computer System Design and many other areas. Then is no known algorithms for an MP-complete problem which rurs in time bounded by a polynomial on the length of the input (polynomial time) in the worst case nor is one likely to be found. We seek algorithms which solve meanly every instance of specific MP-complete problems in the land. ISTRACT: (U) The goal of this research is to develop and analyze algorithms which can, in some practical sensagious certain NP-complete problems efficiently. By solve polynomial time.

SCRIPTORS: (U) \*ALGORITHMS, \*PROBABILITY, ARTIFICIAL INTELLIGENCE, OPERATIONS RESEARCH, POLYNOMIALS, SOLUTIONS(GENERAL), TIME, VARIABLES, PROBLEM \$OLVING DESCRIPTORS: (U)

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DTIC REPORT BIBLIDGRAPHY SEARCH CONTROL NO. EVN34M

AD-A188 917 CONTINUED

AD-A168 615 12/1

IDENTIFIERS: (U) NP complete problems, PEB1102F, WLAFOSR2304A2

RUTGERS - THE STATE UNIV NEW BRUNSWICK N J

(U) Analysis and Regulation of Monlinear and Gereralized Linear Systems

DESCRIPTIVE NOTE: Final technical rept. 15 Jun 80-14 Jul 85

SEP 46 12P

PERSONAL AUTHCRS: Sontag, Eduardo D.;

CONTRACT NO. AFOSR-80-0198

PROJECT NO. 2304

TASK NO. AB

MONITOR: AFOSR TR-86-0285

## UNCLASSIFIED REPORT

ABSTRACT: (U) Applications are described of various mathematical techniques to problems of regulation and control of notifines sampled-data systems and of systems over rings, including tallay-differential systems and families of linear systems. An extensive bibliography of papers published is included. Keywords: Mathematical models. (Author)

OESCRIPTORS: (U) \*LILEAR SYSTEMS, \*NONLINEAR SYSTEMS, MATHEMATICAL MODELS, RINGS, SAMPLING, NONLINEAR ANALYSIS

IDENTIFIERS: (U) PEGI102F, WUAFUSR2304

SEARCH CONTROL NO. EVN34M DTIC REPORT BIBLIOGRAPHY

6/10 **6/18** 5/10 AD-A186 814

CALIFORNIA UNIV IRVINE DEPT OF PHABUACOLOGY

(U) Mauronal Mechanisms of Intelligence.

Arrual scientific rept. 1 Sep 84-31 Aug DESCRIPTIVE NUTE:

PERSONAL AUTHORS: Stein, Larry ; Belluzzi, James D.

\*INTELLIGENCE, \*COMDITIONING(LEARNING), ADAPTIVE SYSTEMS, ANATOMY, CELLS, DOPAMINE, ELECTRIC CURRENT, FIRING RATES, LEARNING, NETWORKS, PHARMACOLOGY, SITES, NERVE TRANSMISSION, STIMULATION(PHYSIOLOGY), HIPPOCAMPUS

PERTIOZF, WUAFOSR2312A1

IDENTIFIERS: (U)

\*BRAIN, \*DRUGS, \*NERVE CELLS

DESCRIPTORS:

stimulation for measuring reword). Keywords: Neuronal conditioning; Positive reinforcement; Learning; and Adaptive networks.

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AD-A164 614

AF05R-84-0328 CONTRACT NO.

2312 PROJECT NO.

TASK NO.

AFC\$4 TR-86-002387 MONITOR:

UNCLASSIFIED REPORT

brain for positive reinforcement, Our early studies demonstrated for the first time that the firing rate of a brain cell cauld be increased by local applications of reinforcing transmitters of drugs. Our current work has two aims: 1) to examine the detailed anatomical and pharmacological properties of such cellular operant conditioning, and 2) to capare these properties with those of balayloral operant conditioning in order to determine accordant shallarities and differences. We have studied cellular operant conditioning in whole-brain and brain-slice experients. In whole brain, we have attempted to identify those cells most susceptible to reinforcement using electrical stimulation of rewarding brain sites as reinforcement. In brain slice experience. STRACT: (U) The underlying premise of this research is that the newron itself is the functional unit in the characterization of reinforcement receptors in self-stimulation of hippocampus and nucleus accumbers (primary we have found that 1) the reinforcing action of dopamine is likely mediated at 02 dopamine receptors, and 2) cellular operant conditioning is possible using locally applied electrical stimulation as rainforcement. At the behavioral leval we have continued our pharmacological characterization of reinforcement receptors in selfsites of the brain slice experiments), and characterization of reinforcement receptors in place AD-A168 614

preference studies (an alternative method to self-

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# SEARCH CONTROL NO. EVN34M DIIC KEPORT BIBLIOGRAPHY

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9,10 AD-A166 813

OREGON UNIV ENGENE

(U) Visual Representations Subserving Texture Perception.

LOW FREQUENCIES, LOW FREQUENCY, MARKERS, ORGANIZATIONS, SPATIAL DISTRIBUTION, SPATIAL FILTERING, VISION, COLORS, CONTRAS!

IDENTIFIERS: (U) PEB1102F, WUAFOSR2313A5

DESCRIPTIVE NOTE: Final rept. 1 Apr 83-31 Aug 85

1080 98 NYC PERSONAL AUTHORS: Beck, Jacob ; Stevens, Kent A. ;

F49620-83-C-0083 CONTRACT NO.

2313 PROJECT NO.

TASK NO.

TR-86 0290 AFOSR MONITOR:

# UNCLASSIFIED REPORT

Linking of Contours, for example, is a function of contour smooth ass, collinearity, orientation, etc. These differences. Socials of the linking of discrete textures have provided convergent evidence for explicit place markers and the role of similarity of attributes such as color and contrast in establishing these groupings. We have also examined the role of pairwise linkings, or virtual lines for laposing global organization on the localized into vity changes. Also, at the level of contour represe station within testure, we have shown the role of the consave cusp, a localized geometric feature, We have conducted research on the role of spatial filtering, features, and grouping in texture segregation. Our experiments indicate the interplay of two different processes. One process involves the differential excitation of elongated receptive fields. Texture segregation is a function of energy differences (contrast and size) that are largely extracted from the lower spatial frequencies. The second process involves local processes of linking between localized features. affects cannot a explained in terms of low frequency in determining figure-ground assignment in texture. Keywords: Vision; Texture perception, and Texture segments tion.

DESCRIPTORS: (U) \*TEXTURE, \*VISUAL PERCEPTION, CONCAVE HODIES, CONTOU^S, CONVERGENCE, ENERGY, EXCITATION, GLOBAL,

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# SEARCH CONTROL NO. EVN34M DTIC REPORT BIBLIDGRAPHY

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AD-A166 810

MASSACHUSETTS UNIV AMMERST DEPT OF POLYMER SCIENCE AND ENGINEERING

RESIDUALS, WATER, HEAT TREATMENT, PROCESSING, AXES, CHAINS, CHEMICAL REACTIONS, ENVIRONMENTS, RESIDUALS, MATRIX MATERIALS, FILMS, INFRARED RADIATION, FOLARIZATION, REFLECTION, MOLECULAR STRUCTURE CROSSLINKING (CHEMISTRY), REFRACTION, SPECTROFCOPY, MOLECALES, REPRINTS

IDENTIFIERS: (U) Thiazole/Polyphyylene Benzobis, PE61102F, WUAFOSR2303A3

benzobistwiszole) Films.

12P

Spectroscrate Analysis of Poly(p-phenylene

3

Chang, Chih ; Hau, S. L. ; PERSONAL AUTHORS:

F33618-78-C-8178, AF0SN-85-0275 CONTRACT NO.

2303 PROJECT NO.

ç TASK NO. MONITOR:

AF05R TR:86-0250

## UNCLASSIFIED REPORT

PPLEMENTARY MATE: Pub. in Jnl. of Polymer Science: Polymer Phys. : Edition, v23 p2307-2317 1985. SUPPLEMENTAPY NOTE:

postprocessing sample is of obvious interest, not only because it influences the perfection of chain packing and interacts with the satrix material used for composites, but because it may also initiate unexpected chemical determine the relative amount, location, and orientation of residual water and acid molecules in poly(p-phenylene bearoolisthis/le) films. By analyzing the relative absorbance of reflected polarized infrared radiation highly oriented films, the indices of refraction parallel and perpendicular to the chain axis were also obtained. reactions with the polymer during postprocessing thermal treatment, consequently leading to crossifinking or degradation. The principal aim of this spectroscopic analysis is to measure the amount and the environment of residual acid and water molecules in these processed samples. Infrared spectroscopy provides a convenient and effective method to determine the concentration of acid Infrared spectroscopy has been used to The presence of residual acid and water in the or water in a sample. ŝ ABSTRACT:

DESCRIPTORS: (U) \*INFRARED SPECTROSCOPY, \*POLYMERIC FILMS, \*POLYPHENYLEMES, \*THIAZOLES, ACIDS, WOLECULES, CHAINS, PACKAGING, DEGRADATION, ORIENTATION(DIRECTION),

AD-A168 610

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# SEARCH CONTROL NO. EVN34M DISC REPORT BIBLIOGRAPHY

AD-A168 882

STANFORD UNIV CA DEPT OF CHENISTRY

(U) State-Resolved Reaction Dynamics.

DESCRIPTIVE NUTE: Final rept. 1 Nov 84-31 Oct 85,

00CC 88

PERSONAL AUTHORS: Zare, Richard N. ;

CONTRACT ND. F48820-88-C-0021

2303 PROJECT NO.

TASK NO.

AF05R TR 86-0307 MONITOR:

# UNCLASSIFIED REPORT

has been accentified areas: (i) the study of the simplest of all results bisolecular reactions H + B2 yields HD + vusing one laser to generate fast H atoms in the prototy: of HI in an HI + D2 mixture and a second laser to detect the HD product in a quantum state specific manifer by resonance-enhanced multiphoton ignization of Hd via the E.F. I sigma g + state; (2) The determination of the distribution of inpact parameters responsible for the formation of B2[(v\*) product in the beam-gas reaction 8 + HI. This required a full rotational analysis of the Balleq X sigma + and sq C pi During the past three years major progress states; (2) the commencement of studies on ton-molecule reactions in which the respent fon's vibrational and translation evergy is controlled and varied in a systematic mainer ABSTRACT:

SCRIPTORS: (U) \*REACTION KINETICS, \*HYDROGEN IODIDE, \*MOLECALAR STATES, \*PHOTOLYSIS, DEUTERIUM, PHOTOLONIZAT: A. VIBRATION, ROTATION, LASERS, QUANTUM THEORY, CHEMICAL REACTIONS, IONS, MOLECULES, IMPACT, DESCRIPTORS: (U)

Ion molecule interactions, PE61102F IDENTIFIERS: (U) WAF05R2303B1

AD-A188 582

11/4 AD-A166 576 IDAND UNIV MOSCOM DEPT OF MECHANICAL ENGINEERING

(U) Improvement and Optimization of Internal Damping in Fiber Reinforced Composite Materials.

DESCRIPTIVE NOTE: Final rapt. Jun 83-Nov 85

MAR BG

PERSONAL AUTHORS: Gibson, R. F. ; Suarez, S. A. ;

AF05R-83-0156 CONTRACT NO.

PROJECT NO.

3 TASK NO.

TR-88-0330 AFOSR MONITOR:

# UNCLASSIFIED REPORT

analytical approaches. The development of improved techniques for fabrication and testing of specimens and the development of relatively simple design equations for prediction of damping were desirable goals which were also met. Two new computer-sided testing techniques based on the impulse frequency response approach were developed. predicted, very low fiber aspect ratios are required to produce significant improvements in damping. Of the three fiber types tested, the Keviar aramid fiber composite was found to have much better damping than graphite or boron fiber composites. Measurements and predictions also indicate that the control of fiber orientation in a Specimens of graphite/epoxy, boron/epoxy and Kevlar aramid/epoxy were fabricated by using an autoclave-style press cure which was developed specifically for this program. Although a number of parameters were studied, the emphasis was on the influence of fiber length, fiber orientation and fiber material on damping of polymer composites. The experimental results show that, as objectives were to be met by using both experimental and approach to the improvement of damping than the control study the effects of such parameters as fiber aspect ratio, fiber orientation and fiber/matrix properties on damping in fiber reinforced polymer composites. These The objective of this research were to continuous fiber reinforced laminate may be a better Ê ABSTRACT:

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SEARCH CONTROL NO. EVN34M DTIC REPORT BIBLIDGRAPHY

> CONTINUED AD-A166 576

of fiber aspect ratio.

DESCRIPTORS (U) \*DAMPING, \*FIBER REINFGRCED COMPOSITES, \*FIBERS BIRON, FIBER REINFORCEMENT, ORIENTATE \*\* DIRECTION), CINTROL, ASPECT RATIO, MATERIALS, COMPOSITE \*\*ATERIALS, POLYMERS, LENGTH, PREDICTIONS, INTERNAL, EQUATIONS, GRAPHITE, PARMIETERS, APPROACH,

(U) PEB 1102F IDENTIFIERS

AD-A166 568

**8**/8

12/1

PENCEPTRONICS INC WOODLAND HILLS CA

(U) Operator Alarthess/Workload Assessment Using Stochastic Model-Based Analysis of Mycelectric Signals.

DESCRIPTIVE NOTE: Interim rept. Apr 83-Dot 85 on Phase 2,

ERSONAL AUTHORS: Machi, Azad ; Conavay, Carla ; Otsubu, Shiriey ; Chu, Yee-Yeen ; Purcell, Denis ; PERSONAL AUTHORS:

REPORT NO. PIR-1128-88-4

F48820-83-C-0001 CONTRACT NO.

2313 PROJECT NO.

TASK NO.

TR-66-0317 AFOSR MONITOR;

## UNCLASSIFIED REPORT

Mod'als for characterizing sycelectric signal patterns; (2) To investigate under controlled experimental conditions of investigate under controlled experimental conditions of meaningful repeatable quantitative relationships can be identified between MES patterns and operator loading; (3) To experimentally identify miscle sites that provide procedures for tuning the models and possibly filtering out pattern variations due to variables in electrode locations and individual biases; and (5) To develop guidelines for automatically assessing operator alertness level from the MES temporal signature in piloting tasks. ABSTRACT: (U) This report summarizes the activities in the second phase of a three-year program of research and development directed toward the analysis and evaluation of myorlectric signals (MES) as indicators of operator alerthese, and potentially workload in aircraft piloting tasks. The purpose of the study is to investigate the efficiency of stochastic models such as autoregressive autoregressive moving-average (ARMA) and autoregressive integrated moving average (ARMA) models in characterizing the MES under different levels of task Appared burden. The specific objectives of this effort are: (1) to develop/adapt state-of-the-art stochastic

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# SEARCH CUNTROL NO. EVN34M DTIC REPORT BIBLIDGRAPHY

CONTINUED AD-A164 868 (Author)

AT ATENTION, EFFICIENCY, ELECTRODES, ATENTION, EFFICIENCY, ELECTRODES, ATENTION, EFFICIENCY, ELECTRODES, ATENTIATIVE ANALYSIS, STOCHASTIC PROCESSES, TUNING, REGRESSION ANALYSIS, PATTERN \*OPERATORS(PERSONNEL), \*NORKLOAD, DESCRIPTORS: (U)
PERFORMANCE(HE: X
PMONITORING, A: REPRODUCIBILITY POSITION(LOCAT:

FRTIFIERS: (U) Alenthess, MES(MyoElectric Signals), ARMA(AutoRegressive Moving Average), ARIMA(AutoRegressive Integrated Moving Average), PEG1102F, MUAFOSR2313A4 IDENTIFIERS:

AL PROCESSING

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MORE MEASUREME

0/3 8/10 **9/9** AD-A166 567

PERCEPTROMICS INC WOODLAND HILLS CA

(U) Operator Alanthess/Norkload Assessment Using Stochastic Model-Based Analysis of Mycelectric Signals.

DESCRIPTIVE NOTE: Final rept. Apr 84-Oct 85,

**400** NOV BB PERSONAL AUTHORS: Madni, Azad ; Conawcy, Carla ; Otsubu, Shirley ; Chu, Yee-Yeen ;

REPORT NO. PFTR-1126-85-11

F48620-83-C-0001 CONTRACT NO.

TASK NO.

2313

PROJECT NO.

AF0SR TR-88-0325 MONITOR:

## UNCLASSIFIED REPORT

ABSTRACT: (U) This report summarizes the research conducted in the second phase of this three-year research and development program directed toward the analysis and evaluation of mycelectric signals (MES) is indicators of operator electrons and piloting workload. The purpose of the study was to investigate the officiency of stochastic models such as autoregressive (AR), autoregrassive-moving-average (ARMA) and autoregressive integrated moving-average (ARMA) models in characterizing the MES under different levels of task-imposed burden. The implications from this three-year research program are two-fold. Surface mycelectric activity is not a reliable measure of operator alertheas. During Phase I, the first sultoregressive coefficient of the ARMA model revealed a significant correlation with task difficulty level. During Phase III, the pi weights did not show the same trend. Intramuscular alectrodes, on the other hand, that revealed that the total number of experimental subjects which were constrained by program scope and size were inadequate in terms of producing a statistically do pick up more reliable signatures have obvious drawbacks. Post hoc snalysis of the experimental data significant difference in perceived stress between the

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# SEARCH CONTROL NO. EVN34M DIIC REPORT BIBLIOGRAPHY

CONTINUED 40-A104 867 single and dual-task groups.

SIGNAL PROCESSING DESCRIPTORS:

MENTIFIERS: (U) Alenthess, MES(MyoE)ectric Signals), Arms(AutoRegressive Moving Average), ARIMA(AutoRegressive Integrated Moving Average), PES1102F, WUAFOSR2313A4 IDENTIFIERS: (9)

6/3 AD-A188 561 MASSACHUSETTS INST OF TECH CAMBRIDGE DEPT OF AERONAUTICS AND ASTRONAUTICS

(U) Approximate Evaluation of Reliability and Availability Via Perturbation Analysis.

Annual progress rept. 1 Jun \$4-31 May DESCRIPTIVE NOTE:

45P SEP &6

Walker, Bruce K.; Chu. Siu-Kuong; Wereley PERSONAL AUTHOR ::

Norman M. :

AF05R-84-0180 CONTRACT NO.

PROJECT NO. TASK NO.

TR-8:1-0314 AFOSIC MONITOR:

## UNCLASSIFIED REPORT

Availability: Document partially illegible.

approximate techniques for deriving results from these models. The basic idea is that the time-behavior of the model decomposes into two time scales where the results of interest occur in time frames intermediate to the two time scales. By modifying previous theory, an approximate evaluation scheme is developed and shum to be valid for STRACT: (U) Progress is described on a project whose goal is the devalopment of practical tools for evaluating the reliability and svallability of fault-toleran\* a number of example cases, Ongoing work is also described control or sensor systems. The approach relies on the generation of a Markovian model for the behavior of the system in terms of failures and Redundancy Management decisions. The project entails the investigation of (Author) ABSTRACT:

SYSTEMS: (U) \*FAULT (DLERANT COMPUTING, \*CONTROL SYSTEMS, \*SYSTEMS ANALYSIS, DECISION MAKING, DETECTORS, MANAGEMENT, MARKOV PROCESSES, PERTURBATIONS, REDUNDANCY, RELIABILITY, SCALE, TEST AND EVALUATION, TIME, TIME INTERVALS, MATHEMATICAL MODELS DESCRIPTORS:

AC-A158 561

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# DTIC REPORT BIBLIDGRAPHY SEARCH CONTROL NO. EVN34M

AD-A168 B61 CONTINUED

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PEBI102F, MUAFOSR2304K3

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IDENTIFIERS:

VANDERBILT UNIV HASHVILLE TN DEPT OF CHEMISTRY

(U) Potentials for Weakly Bound States in I2 from Diffuse Spectra and Predissociation Data.

MAY 85 GP

PERSONAL AUTHORS: Tellinghuisen, Joel;

CONTRACT NO. AFOSR-83-0110

PROJECT NO. 2303

TASK NO. B1

MONITOR: AFOSR TR-86-0214

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Jnl. of Chemical Physics, v82 n8 p4012-4016, 1 May 85.

ABSTRACT: (U) Potential curves are derived for the 2431 I sub u and 2341 I sub g 3 Pt states of I2 using exteting data from several sources. Compared with previous estimates, the new potentials are thought to be valid over a wider range of internuclear distance, spanning the shallow bound wells at large R (>4A) and the repulsive regions where they cross the well-known B(0(+) sub, u) P() state at small R (<3.3A). Seven of the ten Hund's case (C) molecular states which correlate with ground-state I atoms are now known experimentally, including three which cross the B state. The role of these states in the collisional quenching of B and in the geminate recombination of I atoms is considered. Keywords: Diffuse spectra predissocation; Internuclear collisional

DESCRIPTORS: (U) \*QUENCHING, \*IODINE, \*RECOMBINATION REACTIONS, ·IONS, DIFFUSION, GROUND STATE, MOLECULAR STATES, REPRINTS, COLLISIONS, PHOTODISSOCIATION, EMISSION SPECTRA, ELECTRONIC STATES

:

IDENTIFIERS: (U) PEG1102F, WUAFOSR2303B1

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# DITC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EVN34M

AD-A108 644 12/1

PLORIDA STATE UNIV TALLAMASSEE DEPT OF STATISTICS

(U) Estimating Jointly System and Component Reliabilities Using a Mutual Censorship Approach.

DESCRIPTIVE MOTE: Technical rept.,

926 99 356

PERSONAL AUTHORS: Doss, Hani ; Freitag, Steven ; Proschan,

Frank ;

REPORT NO FSU-STATISTICS-M717, TR-88-188-AFOSR

CONTRACT NO F48620-88-C-0007

PROJECT NO. 2304

TASK NO. AS

MONITOR: AFOSR TR-86-0334

# UNCLASSIFIED REPORT

observed structure of independent components. Suppose that we have a sample of independent systems, each having the structure phi. Each system is continuously observed until it fails. For every component in each system, as the structure phi. Each system is continuously observed until it fails. For every component in each system, a then time of system failure; otherwise a censoring time is recorded if the component fails before or at the time of system failure; otherwise a censoring time is recorded. We introduce a method for finding estimates for fit) quantiles, and other functionals of f, based on the censorship of the component limit theorems that enable the construction of confidence intervals for large samples. (Author)

DESCRIPTORS (U) \*ESTIMATES, \*STATISTICAL ANALYSIS, CENSORSHIP, COHERENCE, CONFIDENCE LIMITS, FAILURE, INTERVALS, SAMPLING, TIME

IDENTIFIERS (U) Kaplan Meier estimator, PEG1102F, WLAFOSR23448

AD-A168 B33 12/1

NORTH CAROLINA UNIV AT CHAPEL HILL DEPT OF STATISTICS

(U) Conditional Scores and Optimal Scores for Generalized Linear Messurement-Error Models.

DESCRIPTIVE NOTE: Technical rept. Aug 85-Aug 85,

OCT 85 28F

FERSONAL AUTHORS: Stefanski, Leonard A.; Carroll, Raymond J.

FEPORT NO. MINEO-SER-1588

CONTRACT NO. F48620-82-C-0008

PROJECT ND. 2304

TASK NO. AS

MONITOR: AFOSR TR-86-0319

## UNCLASSIFIED REPORT

ABSTRACT: (U) This paper studies estimation of the parameters of generalized linear models in canonical form when the explanatory vector is measured with independent normal error. For the functional case, i.e., when the explanatory vectors are fixed constants, unbiased score functions are obtained by conditioning on certain sufficient statistics. This work generalizes results obtained for logistic regression. In the case that the explanatory vectors are independent and identically explanatory vectors are independent and identically dustions are obtained using the theory developed in Begun et al. (1983). Keywords: Conditional score function; Efficient score function; Efficient score function; Efficient score function; Structural model; Wessurement error; Structural model.

DESCRIPTORS: (U) \*SCORING, \*ERROR ANALYSIS, CONSTANTS, ERRORS, ESTIMATES, LINEAR SYSTEMS, LINEARITY, MATHEMATICAL MODELS, MEASUREMENT, OPTIMIZATION, REGRESSION ANALYSIS, FUNCTIONAL ANALYSIS, COVARIANCE

IDENTIFIERS: (U) Canonical forms, Maximum likelihood estimation, PE61102F

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AD-A188 544

UNCLASSIFIED

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EVN34M

# SEARCH CONTROL NO. EVN34M DTIC REPORT BIBLIDGRAPHY

AD-A166 532

NOATH CAROLINA UNIV AT CHAPEL HILL DEPT OF STATISTICS

(U) M-Estimation for Discrete Data: Asymptotic Distribution Inmony and Implications.

Technical rept. Aug 35-Aug 86, DESCRIPTIVE NOTE:

PERSONAL AUTHORS: PERSONAL AUTHORS: Simpson, Douglas G.; Carroll, Raymond J.; Mappert, David;

MINEO - SER - 1586 REPORT NO.

F48620-82-C-0008 CONTRACT NO.

2304 PROJECT NO.

TASK NO.

AF05R TR-88-0320 HONITOR:

## UNCLASSIFIED REPORT

estimator is studied when the underlying distribution is discrete. Asymptotic normality is shown to hold quite generally within the assumed parametric family. When the apecification of the accele its inexact, however, it is demonstrated that an M-estimator with a non-smooth score function, e.g. a haber estimator, has a non-normal limiting distribution at certain distributions, resulting distributions Consequently, swoith score functions are proposed for discrete data. Kaywords: Robust estimation; M estimator; Discrete paraestric model; Smooth score in unstable teterance in the neighborhood of such : function. DESCRIPTORS: (U) \*ASYMPTOTIC NORMALITY, \*PROBABILITY DISTRIBUTION FUNCTIONS, ABNORMALITIES, ASYMPTOTIC SERIES, DISTRIBUTION ESTIMATES, LIMITATIONS, MATHEMATICAL MODELS, PARAMETRIC AMALYSIS, SCORING, DISCRETE DISTRIBUTION

M estimates, Robust procedures, 9 IDENTIFIERS:

A3-A168 532

AD-A188 531

CALIFORNIA UNIV BERKELEY ELECTRONICS RESEARCH LAB

(U) R-Trees: A Dynamic Index Structure for Spatial Searching.

DESCRIPTIVE NOTE: Interim rept.,

OCT 83

Guttman, Antonin ; Stonebraker, Michael ;

REPORT NJ. UCB/ERL-M83/64

AF0SR-83-0264, NSF-ECS83-00463 CONTRACT NO.

2304 PROJECT NO.

7 TASK NO. MONITOR

AF05R TR-86-0337

## UNCLASSIFIED REPORT

multi-dimensional spaces and are not well represented by point locations. For example, map objects like countries, census tracts etc. occupy regions of non-zero size in two dimensions. A common operation on spatial data is to search for all objects in an area. An example would be to find all the countries that have land within 20 miles of a particular point. This kind of spatial search occurs frequently in computer sided design (CAD) and geo-date applications. In such applications it is important to be able to retrieve objects efficiently according to their proposed for handling multi-dimensional point data, and a survey of mathods can be found. Call methods are not good for dynamic structures because the call boundaries must be decided in advance, quad trees and k-d trees do not take paging of secondary memory into account. K-D-B trees are designed for paged memory but are only useful for point data. The use of index intervals has been suggested but this method cannot be used on multiple dimensions. Corner stitching is an example of a structure for two-dimensional spatial searching suitable for data objects of non zero size, but is assumes homogeneous primary memory and is not efficient for random searches in very Spatin) data objects often cover areas in spatial location. A number of structures have been ABSTRACT:

43-A 188 531

# SEARCH CONTROL NO. EVN34M DIIC REPURI JIBLIOGRAPHY

CONTINUED AD-A168 531

large collections of date, Grid files handle non-point data by mapping each object to a point in a higher-dimensional space. This paper describes an alternative structure called an R-tree which represents data objects by intervals in several dimensions.

DESCRIPTORS: (U) \*ALOK ITHMS, \*SEARCHING, BOUNDARIES, COLLECTION, CONTOUR ALDED DESIGN, DYNAMICS, INDEXES, INTERVALS, WEYNEY DEVICES, OPERATION, PAGING, DIRENSITIONAL COUNTY, REGIONS, SECONDARY, TREES, TWO DIMENSIONAL

PEG 1 102F IDENTIFIERS: (U)

AD-A168 530

CALIFORNIA UNIV BERKELEY ELECTRONICS RESEARCH LAB

(U) Implementation Tachniques for Main Memory Database Systems.

Interim rept., DESCRIPTIVE NOTE:

1 NO

REGNAL AUTHORS: DeWitt, David J.; Katz, Randy H.; Olken, Frank; Shapiro, Leonard D.; Stonabraker, Michael R.; PERSONAL AUTHORS:

UCB/ERL-84/6 REPORT NO.

AFOSR-83-0284, NSF-MC\$82-01860 CONTRACT NO.

2304 PROJECT NO.

3 TASK NO. AFDSR TR-66-0338 MONITOR:

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Sponsored in part by grants, NSF MCS82-01870, DE-ACO2-81ER10820, and W 7405-ENG-48.

relatively inexpensive main memories, it is becoming possible to keep large databases rosident in main memory. This paper considers the changes necessary to permit a relational database system to take advantage of large amounts of main memory. The authors evaluate AVL vs. Etcres access methods for main memory databases, hash-based query processing strategies vs. sort-varge, and study recovery issues when most or all of the database fits in main memory. As expected, Bt-trees are the preferred storage mechanism unless more than 80-90% of the database fits in main memory. As somewhat surprising result is that hash based query processing strategies are advantageous for large memory situations. Keywords: Access; Algorithms. ABSTRACT: (U) With the availability of very large, (Author)

:SCRIPTORS: (U) \*DATA STORAGE SYSTEMS, ALGORITHMS, DATA BASES, MEMORY DEVICES, TREES DESCRIPTORS: (U)

Relational data bases, PEG11021 IDENTIFIERS: ' (U)

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AD-A158 531

# SEARCH CONTROL NJ. EVN34M DIIC REPORT BIBLIOGRAPHY

12/1 AD-A168 528 ARIZONA UNIV TUCSON DEPT OF MATHEMATICS

(U) Bounds for the System Reliability Functi

Technical rept. DESCRIPTIVE NOTE:

MAY 85

Shanthikumar, J. G. PERSONAL AUTHORS:

AF0SR-84-0208 CONTRACT NO.

2304 PROJECT NO.

2

TASK ND.

MONITOR:

AF0SR TR-86-0335

# UNCLASSIFIED REPORT

rememble components with arbitrary lifetime distributions is considered. A simple observation leads to a histarchy of upper and lower bounds that converge to the exact system reliability. The simplest of these bounds is shown to be tighter than the bounds of Gertsbakh (1885). (Author) ABSTRACT:

CACHIFTONS: (U) \*DISTRIBUTION FUNCTIONS, COHERENCE. HIERARCHIES, RELIABILITY DESCRIPTORS:

JENTIFIERS: (U) Upper bounds, Lower bounds, Lifetime distributions, PE61102F IDENTIFIERS:

12/1 AD-A168 527 ARIZONA UNIV TUCSON DEPT OF MATHEMATICS

(U) On Stochastic Comparison of Random Vectors.

DESCRIPTIVE NOTE: Technical rept...

APR 16

Shanthikumar, J. G. PERSONAL AUTHORS:

AF05R-84-02()5 CONTRACT NO.

2304 PROJECT NO.

Ş TASK NO. AF0SR TR-86-0333 MONITOR:

## UNCLASSIFIED REPORT

SSTRACT: (U) This document provides sufficient conditions under which two random vectors could be stochastically compared using the standard construction. These conditions are weaker than those discussed by Arjas and Lehtonen and Velnott. Using these conditions the authors present extensions of a result of Block, Bueno, Savits and Shaked concerning the stochastic monotonicity of independent and identically distributed random variables conditioned on their partiel order statistics, and a theorem of Efron regarding an increasing property of Polya frequency functions. Applications of these extensions are also pointed out. (Author) ABSTRACT:

SCRIPTORS: (U) \*VECTOR ANALYSIS, COMPARISON, DISTRIBUTION, FREQUENCY, ORDER STATISTICS, RANDOM VARIABLES, STOCHASTIC PROCESSES, FUNCTIONS(MATHEMATICS) DESCRIPTORS: (U)

PE61102F IDENTIFIERS: (U)

AD-A:08 527

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EV134M 75 PAGE

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#### UNCLASSIF1 &D

# STARCH CONTROL NO. EVN34M DIIC REPURT BIBLIOGHA SHY

AD-A168 526

ARIZONA UNIV TUCSON DEPT OF MATHEMATICS

First Failure Time of Dependent Parallel Systems with Safety Periods.

Technical rept. DESCRIPTIVE NOTE:

27P FEB 15 PERSONAL AUTHORS: Shanthikumar, J. G.

AF0SR-84-0206 CONTRACT NO

2304 PROJECT NO.

TASK NO.

AFOSR MONITOR:

TR-86-0332

UNCLASSIFIED REPORT

failure of a parallel system in which the failure and repoil rates of components depend on the state of the other components as well. A back-up unit with a random life time is employed whenever all the components of the system are down. The system fails when all the components of the system and the back-up unit are down. The first moment, the Laplace transform and the probability distribution of the time to first failure of this system. exponential limit property are given. Special cases with plass type and deterministic back-up unit lifetimes are also considered. These results extend the results of Ross and Schechtman (1979). (Author) are obtained. Sufficient conditions under which this distribution has the new better than used (NBU) and an This paper considers the time to first

SCRIPTORS: (U) \*SYSTEMS ANALYSIS, \*APPLIED MATHEMATICS, BACKUP SYSTEMS DETERMINANTS(MATHEMATICS), FAILURE, LAPLACE TRANSFORMATION, MOMENTS, PARALLEL ORIENTATION, PARTS, PROBABILITY DISTRIBUTION FUNCTIONS. RATES, REPAIR, DESCRIPTORS:

IDENTIFIERS:

AD-A168 526

AD-A168 524

MICHIGAN UNIV ANN ARBOR ROBOT SYSTEMS DIV

Coordinated Research in Robotics and Integrated Manufacturing. DESCRIPTIVE NOTE: Final rapt. 1 Aug 84-30 Oct

MOV 85

ERSOWAL AUTHORS: Atkins,D. E.;Volz,R. A.;Gilbert,Elmer E.;Hove,Robert M.;Irani,Keki B.; PERSONAL AUTHORS:

RSD-TR-15-85 REPORT NO. F49620-82-C-0089 CONTRACT NO.

PROJECT NO.

Ş TASK NO. AF0SR TR-88-0322 MONI TOR:

UNCLASSIFIED REPORT

is oriented toward the understanding and development of the flexible robot based manufacturing cells or islands which will increazingly become basic blocks for the building of modern parts production and assembly facilities. Present work spans a hierarchy of sub-systems oriented toward the development and integration of high robot arm control, new types of sensors, analysis and use of advanced sensors information, to higher level languages for robot control, integration of robot systems with CAD databases, and heuristic problem solving cells. The research topics being pursued range from highly sophisticated and accurate control algorithms for The research procured under this contract performance manipulators into flexible manufacturing techniques.

MANUFACTURING, ALGORITHMS, ASSEMBLY, CELLS, CONTROL, DATA BASES, DETECTORS, HEURISTIC METHODS, INTEGRATED SYSTEMS, INTEGRATION, MANIPULATORS, MANUFACTURINC, PARTS, PROBLEM SOLVING, PRODUCTION, ROBOTS, COMPUTER AIDED DESIGN \*ROBOTICS, \*COMPUTER AIDED 3 DESCRIPTORS:

PEB 1 102F 3

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# SEARCH CONTROL NO. EVN34M DTIC REPORT BIBLIDGRAPHY

CHARLOTTESVILLE DEPT OF ELECTRICAL **7** VIRGINIA UNIV END!NEERING AD-A168 821

(U) Biological Visual Systems Structures for Machine Vision Applied to Robotics.

Final rept. 15 Sep 84-31 Jan 86 DESCRIPTIVE NOTE:

333P 

REGNAL AUTHORS: Intgo, Rafael M.; Hain, Chen H.; Narathong, Chiewlarn; McYey, Eugene S.; Minnix, Jay I.; PERSONAL AUTHORS:

UVA/525847/EE88/101 REPORT NO.

AF05R-84-0348 CONTRACT NO.

PROJECT NO.

2305

TASK 180.

AF0SR TR-88-0282 MONITOR:

## UNCLASSIFIED REPORT

ISTRACT: (U) This report describes the research on a biological visual system (8VS) based sensor with possible applications to robotics and automation. The report covers the following subjects: sensor configuration; edge detection modeling for the human visual system and edge detection using the BVS sensor, qualitative motion detection using the BVS; Target tracking algorithms for the BVS; and Microsaccadid eye movement in the human visual aystem (HVS). Keywords: Machine visual sensor

DESCRIPTORS: (U) \*EYE, \*ROBOTICS, \*VISION, SPACE PERCEPTION, MCRTHOLOGY(BIOLOGY), BIOLOGY, DETECTION, EDGES, EYE MCYEMENTS, MOTION, CONFIGURATIONS, DETECTORS, VISION, HIMANS, ALGORITHMS, TARGETS, TRACKING

AD-A166 501

12/1

NORTH CAROLINA UNIV AT CHAPEL HILL CENTER FOR STOWNASTIC PROCESSES

(U) Stochastic Integration for Operator Valued Processes on Hilbert Spaces and on Nuclear Spaces. Revision.

DESCRIPTIVE NOTE: Technical rept.

MAR 86

Koreziloglu, H. ; Martias, C. PERSONAL AUTHORS:

REPORT NO.

F49810-85-C-0144 CONTRACT NO.

2304 PROJECT NO.

TASK NO.

TR-86-0326 AFOSR MONITOR:

#### UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

Supersedes AD-A158 878.

nuclear space valued sqare integrable martingale is given in terms of stochastic integrals of operator valued processes. The construction of the stochastic integral goes through that of operator valued processes on Hilbert spaces. A new approach is given for the Hilbertian case, so that only the integration of Hilbert-Schmidt operator valued processes is needed to represent square integrable valued square integrable martingale by means of another The representation of a nuclear space martingales. (Author) Ξ ABSTRACT:

SCRIPTORS: (U) \*STOCHASTIC PROCESSES, \*OPERATORS(MATHEMATICS), HILBERT SPACE, INTEGRALS. DESCRIPTORS: (U) INTEGRATION

Martingales, Muclear spaces, WUAFUSR2304A5, PEB1102F IDENTIFIERS:

49-A168 521

AG-A188 501

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SEARCH CONTROL NO. EVN34M DT C REPURT BIBLIDGRAPHY

SAI INTERNATIONAL MENLO PARK CA

(U) Development System for Flexible Assembly System

Annual rept. 1 Feb 84-31 Jan 85 DESCRIPTIVE NOTE:

FEB 86

Smith, Randall C. PERSONAL AUTHORS:

F48620-84-K-0007 CONTRACT NO

PROJECT NO.

TASK NO.

3

AF05R MONITOR:

TP-88-0329

## UNCLASSIFIED REPORT

object; and we are developing an interactive-graphic, off-line robot workcell programming, modeling, and simulation system, called WORKMATE, WORKMATE has been used to generate a demonstration pick and place task incorporating vision, executed in our laboratory workcell. This document includes the following papers: (1) 'On the Representation and Estimation of Spatial Uncertainty'; (2) 'fast Robot Collision Detection using Graphics Hardware'. improving the ability of a computer to estimate spatial relationships among objects when the relationships are uncertain; we have developed a very fast method for defermanising collisions between a robut and its environment in simulation, suitable for hardware implementation; we are developing a method for estimating the location of a workpiece in a manipulator's hand by measuring forces and torcues on the hand as it moves the We have developed theoretical methods for ABSTRACT: (U)

SCRIPTORS: (U) \*ROBOTS, \*ELECTROMECHANICAL DEVICES, \*COMPUTER AFPLICATIONS, ASSEMBLY, COLLISIONS, ESTECTION, METHODOLOGY, OFF LINE SYSTEMS, THEORY, TORQUE, VISION, MANIPULATORS, INTERACTIVE GRAPHICS, COMPUTER PROGRAMS DESCRIPTORS:

ENTIFIERS: (U) MORKMATE computer programs, WOR, AATE(Workstation Modeling Analysis Training and Emulation). C programming language, LPN-SRI-7239, PEB:1102F, WUAFOSR2306A3 DENTIFIERS: (U)

14/5 AD-A168 498 MICHIGAN UNIV ANN ARBOR DEPT OF ELECTRICAL AND COMPUTER ENGINEERING

(U) Holographic Optical Elements Formed in Light of Reduced Coherence.

Annual rept. no. 7, 30 Nov 84-30 Nov 85, DESCRIPTIVE NOTE:

FEB 16

PERSONAL AUTHORS: Laith, E.

AF05R-85-0012 CONTRACT NO.

2306 PROJECT NO.

TASK NO.

TR-86-0324 MONITOR:

#### UNCLASSIFIED REPORT

coherent conversion . Kaywords: Hologram; Optical element; Interferometry; and Spatial filtering. The theory of holographic optical elements methods are considered. A theory of broad source fringe formation based on source image distortion is developed. The theory of HOE formation with two zone plates in tandem and under reduced temporal coherence is developed. A new technique of spatial filtering with spatially (HOE) made with light of reduced coherence is developed. linear in amplitude and phase preserved) even though the light is spatially incoherent. A technique for obtaining resolution beyond the classical limit (superresolution) was discovered, based on the principle of incoherent to Both reduced spatial coherence and temporal coherence incoherent light was developed in which the optical system behaves as if the light were coherent (i.e., 3 ABSTRACT:

COHERENT OPTICAL RADIATION, DISTORTION, IMAGES.
INCOHERENT SCATTERING, INTERFEROMETRY, LIGHT, LIMITATIONS,
OPTICAL EQUIPMENT, OPTICAL EQUIPMENT COMPONENTS,
REDUCTION, SOURCES, SPATIAL DISTRIBUTION, SPATIAL \*HOLOGRAPHY, \*HOLOGRAMS, COHERENCE, 3 DESCRIPTORS:

Superresolution, PEB1102F Ĵ DENTIFIERS:

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DTIC REPORT BIBLIDGRAPHY SEARCH CONTROL NO. EVN34M

CONTINUED

AD-A168 488 C

AD-A168 493 7/4 7/3

IDAHO UNIV MOSCOW DEPT OF CHEMISTRY

(U) Gas-Phase Structure of Perfluoro nitrosocyclobutane,

98

PERSONAL AUTHORS: Marsdan, Helen M.; Oberhammer, Heinz; Shreeve, Jean'ne M.;

CONTRACT NO. AFOSR-82-0247

PROJECT NO. 2303

TASK NO 82

MONITOR: AFOSR TR-86-0328

## UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Inorganic Chemistry, v24 n28 p4756-4758 1985.

ABSTRACT: (U) Perfluoronitrosocyclobutane was prepared from nitrosyl chloride and perfluorocyclobutane in the presence of anhydrous KF and CH3CN. Both exp conformers (ax-exp and eq-exp) are compatible with experiment. The nitroso group causes considerable angle distortion of the cyclobutane ring. Keywords: Electron diffraction study.

DESCRIPTORS: (U) \*ELECTRON DIFFRACTION, \*CYCLOBUTANES, ANGLES, CHLORIDES, DISTORTION, RINGS, MOLECULAR STRUCTURE, VAPOR PHASES, SYNTHESIS(CHEMISTRY), REPRINTS

IDENTIFIERS: (U) Butane/Parfluoronitrosocyclo, PEB1102F

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# SEARCH CONTROL NO. EVN34M DITIC .. EPORT BIBLIDGRAPHY

AD-A188 481

HICDONNICL DOUGLAS ASTRONAITICS CO-ST LOUIS HO

(U) Investigation of an Asymptotic Expansion Technique to Analyze Limit Cycle Nesponse of Aurodynaulo Surfaces With Structural Monlinearities.

integration techniques selected for evaluation were: fourth-order Runge-Kutta, eighth-order Shanks, and fourth-order Adams-Moulton predictor-corrector. Results of the three simulation techniques compared well with each other Keywords: Limit cycle oscillation, Structural nonlinearity, Flutter analysis.

in general. The numerical

nonlinear systems

response of

CONTINUED

AD-A168 491

\*NUMERICAL METHODS AND PROCEDURES, \*NATHEMATICAL PREDICTION, ASYMPTOTIC SERIES, DAMAGE, FATIGUE(MECHANICS). MATHEMATICAL MODELS, METHODOLDAY, MOTION, NONLINEAR SYSTEMS, NUMERICAL INTEGRATION, OSCILLATION, FIMILATION, SOLUTIONS (GENERAL), THESES, DYNAMIC RESPONSE, CYCLIC TESTS, AFPORLASTICITY

PEB1102F

IDENTIFIERS: (U)

\*AERODYNAMIC CONTROL SURFACES, \*FLUTTER

3

DESCRIPTORS:

DESCRIPTIVE HOTE: Final rapt. 13 Sap 84-13 Jul 45

3

Hauenstein, Anthony J. ; Laurenson, Robart PERSONAL AUTHORS: + M. ; Qubser, John L.

F49620-84-C-0123 CONTRACT NO.

2307 PROJECT NO

TASK NO.

TR 86-0288 AFOSR MONITOR:

## UNCLASSIFIED KEPORT

nonlinearities Results from such simulations are needed integrity of a given design for its operational environment. Civergence and flutter phenomena are unstable motions with increasing amplitude. For systems containing structural nonlinearities, another mode of present response limit cycle oscillation may be present. The potential of limit cycle response is important since these oscillations may occur within the the nature of the nonlinear system response which may be envelope and may load to fatigue damage of the system even through aeroelastic instability is not encountured. The cojective of this thasis is to evaluate, on a to compare and evaluate approximate solutions for the limit cycle response of nonlinear systems. In addition, these simulation results provide information concerning merodynamic surface dynamics and in understanding the comparative basis, different numerical simulation approaches for predicting limit cycle response of serodynamic surfaces containing discrete structural Defining the flutter and divergence characteristics of se-odynamic surfaces is a basic requirement in assuring structural and performance serodynamic surface flutter and divergence flight used to aid in understanding the mechanism of the

AD-A156 481

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MYCNAS 197 PAGE

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# SEARCH CONTROL ND. EVN34M DTIC REPORT BIBLIOGRAPHY

AD-A164 487

NORTH CAROLINA UNIV AT CHAPEL HILL DEPT OF STATISTICS

Estimating Weights in Heteroscedastic Regression Models by Applying Least Squares to Squared or Absolute Residuels. ĵ

Technical rept. Aug 85-Aug 86 DESCRIPTIVE NUTE:

Carroll, Raymond J.; Davidian, Marie; PERSONAL AUTHERS:

Ruppert, David;

F49620-82-C-0009 CONTRACT NO

MIMEO - SER-1584

REPORT NO.

AFOSR MONITOR:

TK 88-3318

## UNCLASSIFIED REPORT

regression model for which the variances depend on a parametric function of known variables. The authors focus squares. Asst often, squared residuals from an unweighted least squares fit are compared to their expectations and precisely (no same for symmetric errors as the asymptotic deviation relative to the sample variance. The estimators efficiency in the one-sample problem of the mean absolute weighted such methods are asymptotically equivalent to normal-theory maximum likelihood. Instead, one could use the deviations of the absolute residuals from their The results hold with minimal distributional assumptions on estimating the variance function, after what it is typical to estimate the mean function by weighted least asymptotic efficiency relative to maximus likelihood is are computable using nonlinear least squares software. expectations. Constructed is such an estimator of the variance function based on absolute residuals whose used to estimate the variance function. If properly This document considers a nonlinear 2 (Author) \*WEIGHTING FUNCTIONS, COMPUTER PROGRAMS ERRORS, LEAST SQUARES METHOD, MATHEMATICAL MODELS, MAXIMUM LI-ELIHDOD ESTIMATIOM, MEAN, MONLINEAR ANALYSIS, PARAMETRIC AMALYSIS, REGRESSION AMALYSIS, RESIDUALS, SAMPLING, SIMMETRY, VARIATIONS, ESTIMATES 9 DESCRIPTORS

AD-A168 487

17/2.1 AD-A168 484 SOUTHERN METHODIST UNIV DALLAS TEX DEPT OF ELECTRICAL ENGINEERING

(U) Spread Spectrum Mobile Radio Communications

Interim rept. 1 Sep 84-31 Mar 86, DESCRIPTIVE NOTE:

1089 MAR BG Oupts, S. C. PERSONAL AUTHORS:

AF05R-82-0309 CONTRACT NO.

PROJECT NO.

2 TASK NO.

TR-86-0323 AFOSR MONITOR:

## UNCLASSIFIED REPORT

The performance degradation due to hidden terminal problems is analyzed. This is followed by an evaluation of the performance of CSMA with collision detection (CSMA) analyzed to understand how time and phase synchronization errors influence the performance. A set of curves is provided to demonstrate the degradation due to imperfect carrier phase of symbol time synchronization error for results on the performance of carrier sense multiple access (CSMA) protocol for mobile packet radio networks (MPRNET). This is followed by a review of bandwidth efficient digital modulation for mobile radios and some in detail for mobile radio channel. Throughput and delay expression are derived to include the effects of fading. been reviewed for application to mobile radio systems. A Carrier sense multiple access protocol has been analyzed networks. A class of spectrally efficient modulation has spectrally afficient modulation is seen to compete with existing schemes. Mismatched CPFSK receivers have been results on a speech transmission scheme and an analysis of mismatched continuous phase FSK (CPFSK) receivers. speech transmission scheme using DPCM coding and these CD) for FH-FSK spread spectrum mobile packet radio both low and high SNR ABSTRACT:

\*COMMUNICATIONS NETWORKS, \*PACKETS DESCRIPTORS: (U)

AC-A188 484

# SEARCH CONTROL NO. EVN34M DTIC REPORT BIBLIOGRAPHY

CONTINUED AD-A 184 484

AD-A168 481

\*COMMUNICATION AND RADIO SYSTEMS, \*RADIO IRANSMISSION, \*SPEECH THANSMISSION, CHANNELS, CODING, COLLISIONS, DEGRADATION, DETECTION, DIGITAL SYSTEMS, ERRORS, MOBILE, MOCHLATION, RADIO EQUIPMENT, SYMBOLS, SYNCHODIZATION ELECTRONICS), TIME

PEB1102F 3 DENTIFIERS

MORTH CAROLINA UNIV AT CHAPEL HILL DEPT OF STATISTICS

(U) A Note on Adapting for Heteroscedasticity When the Variances Depend on the Mean.

DESCRIPTIVE NOTE: Technical rept.,

OCT 85

PERSONAL AUTHORS: Carroll, Raymond J. ; Ruppert, David ; Stefanski, Leonerd A. ;

F49820-82-C-0009 MKS-1583 CONTRACT NO. REPORT NO.

2304 PROJECT NO.

TASK NO.

AF0SR TR-66-0316 MONITOR:

#### UNCLASSIFIED REPORT

function g of the means. For the case where g is unknown, Carroll showed by construction that, in certain cases, it is possible to estimate the regression parameter asymptotically as well as if g were known and weighted least squares applied. This document reconsiders this problem from the information bound theory of Begun, Hall, ISTRACT: (U) This document considers the normal-theory regression model when the error disturbancus are heteroscedastic, i.e., have non-constant variances. The author distinguishes two cases: 1)predictor surprising result is obtained. If givers known in this case, Jobson & Fuller showed that the maximum likelihood however, we show that one can, in theory, attain asymptotically better performance than weighted least squares with known weights. Keywords: Adaptation; Linear estimate is asymptotically more efficient than weighted lesst squares with known weights. When g is unknown the full Jobson & Fuller improvements are not possible; Huang & Wellner. For mean hetehoscedasticity, a rather hateroscedasticity, where the variances depend on a function g of known quantities and 2) mean heteroscedasticity, where the variances depend on a ABSTRACT: (U)

AC-4:68 481

AD-A188 484

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**EVN34M** 100 PAGE

# SEARCH CONTROL NO. EVN34M DTIC REPORT BIBLIOGRAPHY

CONTINUED AD-A166 481 DESCRIPTORS: (U) \*REGRESSION ANALYSIS, ASYMPTOTIC NORMALITY, ANALYSIS OF VARIANCE, ERRORS, PARAMETERS, LINEARITY, MAT EMATICAL MODELS, LEAST SQUARES METHOD. WEIGHTING FUNCTIONS

 $\begin{array}{lll} \textbf{IDENTIFIERS:} & (U) & \textbf{+Heteroscedasticity,} & \textbf{Maximum likelihood} \\ & \textbf{estimation} \\ \end{array}$ 

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